

CTO

THE RESOURCE FOR INFORMATION EXECUTIVES

PRIVACY IS YOUR BUSINESS

THE PAYOFF FOR CIOs

Learn the Regulations
Master the Data
Advocate Effectively

BY SUSANNAH PATTON

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Registry's project
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Democrats and
Republicans:
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THE VANISHING I.T. GROUP

Are CIOs
getting lazy in
their pursuit
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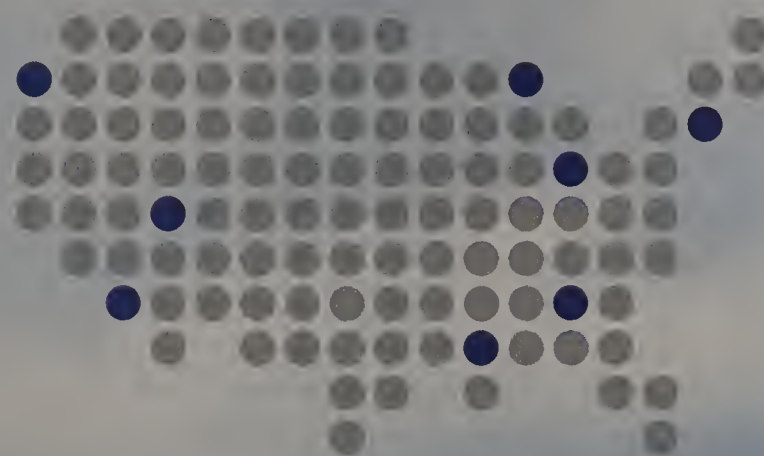
"Our number-one asset is our reputation and the trust of our clients," says Vanguard Group CIO Tim Buckley. "When it comes to data privacy, we need to err on the side of caution."



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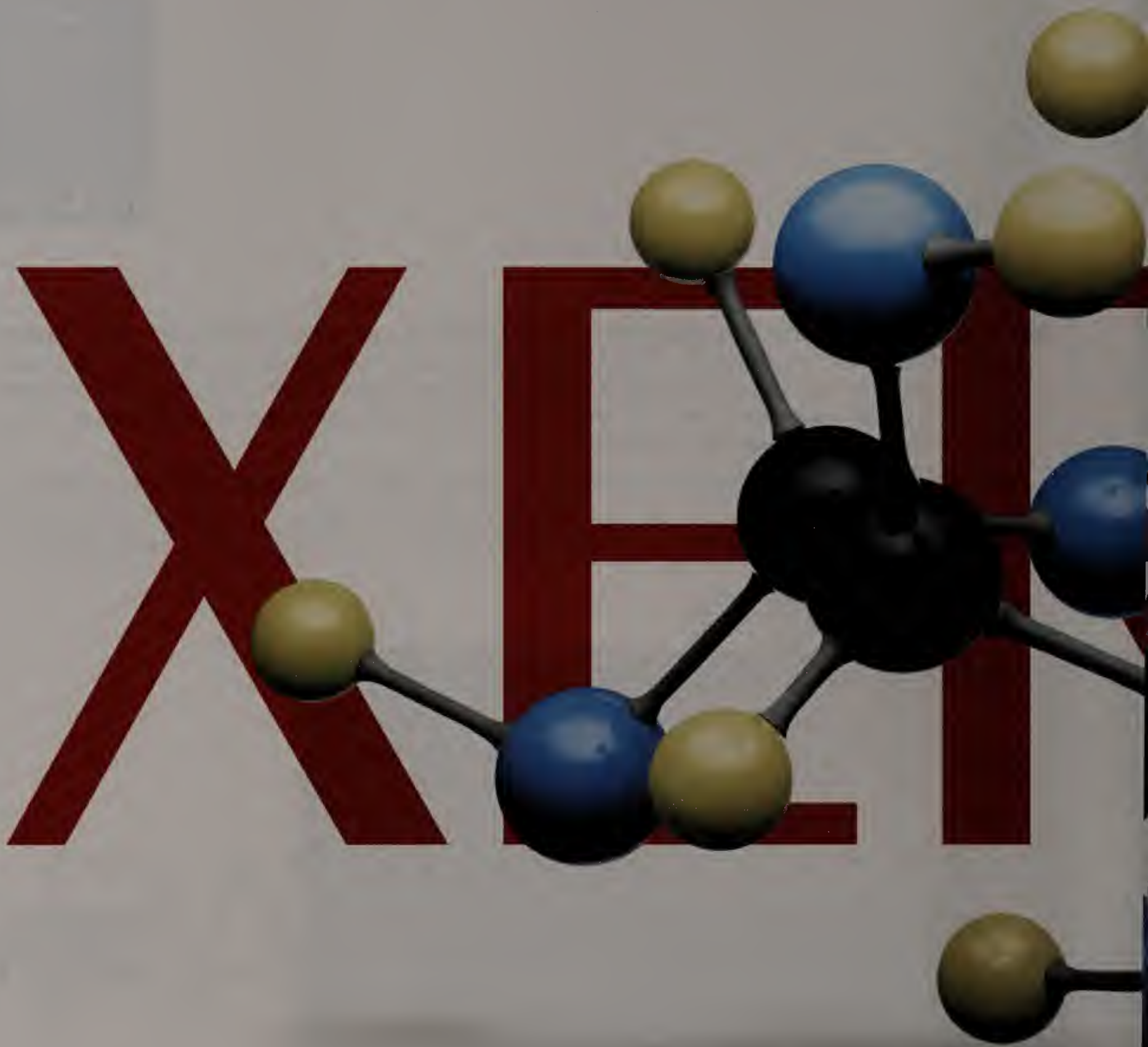
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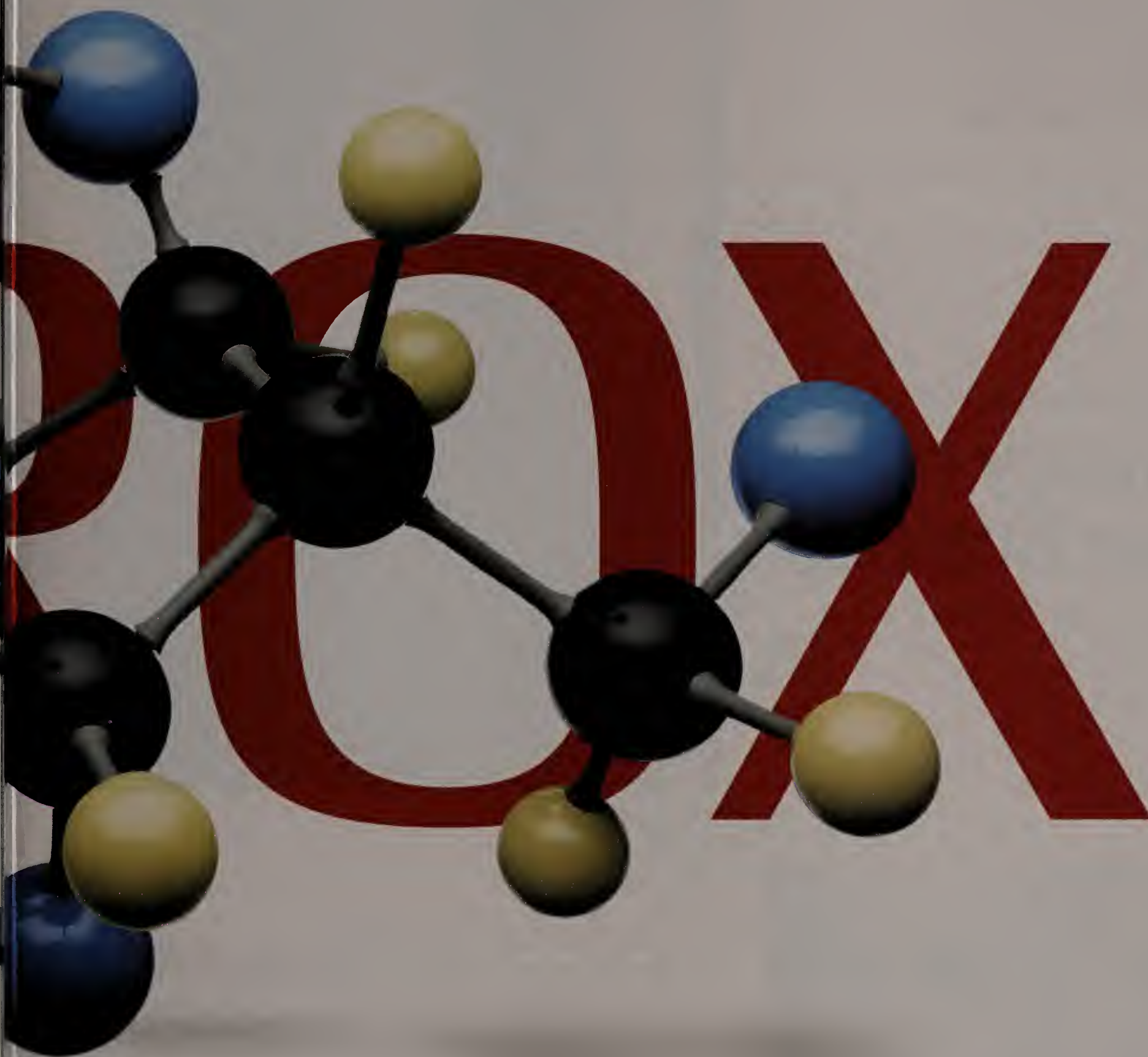
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Cover Story

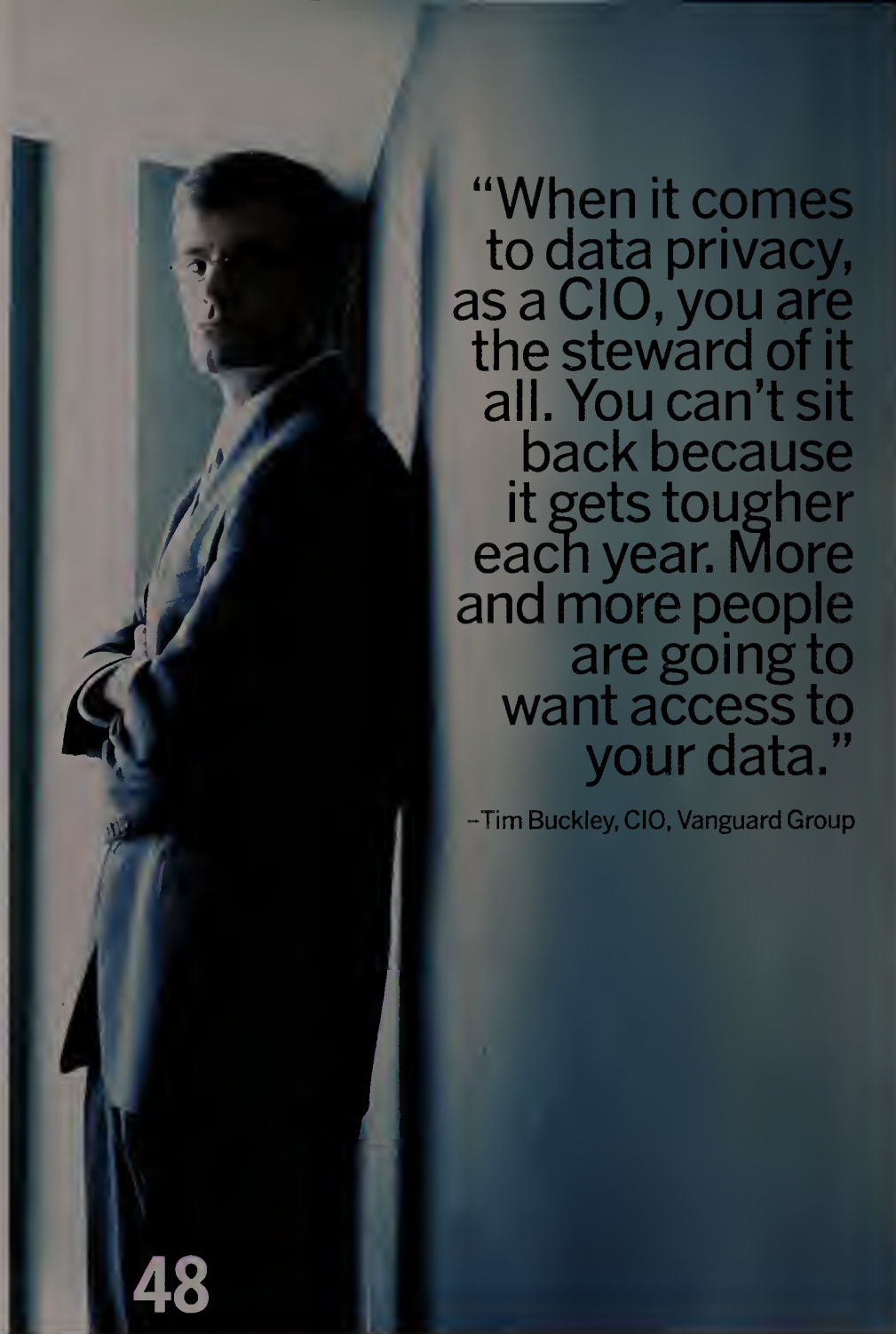
PRIVACY AND SECURITY | 48

Privacy Is Your Business

What's the payoff for CIOs becoming privacy champions? Better business, more secure IT and a higher corporate profile.

By Susannah Patton

COVER PHOTO BY STEVEN VOTE



"When it comes to data privacy, as a CIO, you are the steward of it all. You can't sit back because it gets tougher each year. More and more people are going to want access to your data."

—Tim Buckley, CIO, Vanguard Group

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Rob Carter, CIO of FedEx (left), says his company used to develop its own wireless technology. Ken Lacy, CIO of UPS, says his company waited until this year to begin updating its wireless technologies.

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Despite tight deadlines and a court ruling that temporarily shut it down, the Do Not Call Registry turned out to be one of the most successful IT projects in the history of government. *By Alice Dragoon*

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FedEx and UPS deployed wireless technology when few others dared. Now, they are using new off-the-shelf applications to compete in different ways and at a differing pace—leading the way once again. *By Galen Gruman*

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The 2004 presidential race may well hinge on which party most effectively exploits data mining tools to get out the vote. *By Elana Varon*

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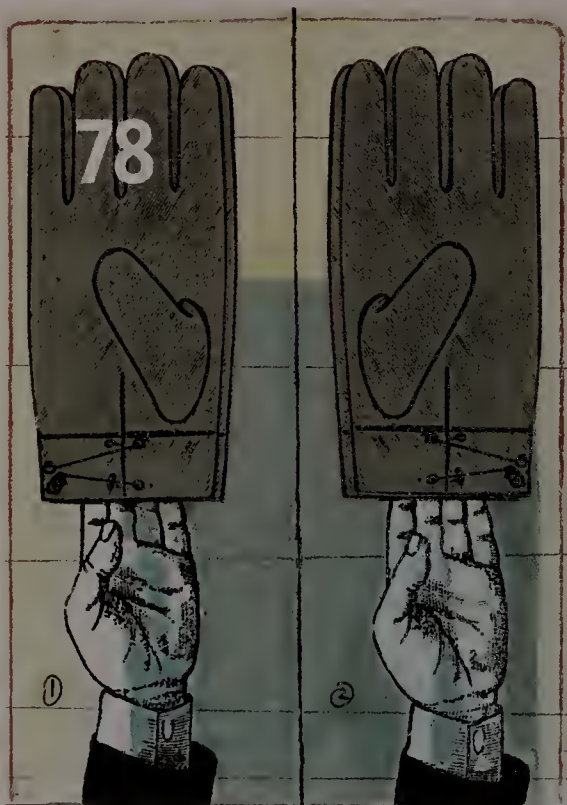
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What's killing many IT departments is not talent shortages or offshore outsourcing. As one longtime CIO argues, it's laziness and lowered expectations. *By Jerry Gregoire*

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IT infrastructure is expensive to maintain, and its importance is not always obvious. Here's how to place a value on the data centers and other parts of your IT boiler room. *By Howard Rubin*



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CIOs cite alignment of IT and business as one of their greatest challenges. Readers discuss the problem and some solutions. *By Art Jahnke*

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In the merger of Mead and Westvaco, the new CIO rejected the existing IT corporate cultures for a third way. *By Tracy Mayor*

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MeadWestvaco CIO Jim McGrane used the merger of the two paper giants as an opportunity to re-focus the mind-set of his IT staff on agility.

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ASK THE SOURCE

How Do You Meet a 100-Day Deadline?

Not many IT projects are funded just three months before their scheduled go-live date (see **How the FTC Rescued the Dinner Hour**, Page 58). Nor are they built under the glare of national media attention and the threat of lawsuits. That's what Stephen Warren, CIO of the Federal Trade Commission, had to endure to launch the Do Not Call Registry. When it comes to being on the hot seat, he knows how to keep his cool. Grill him with your questions on quick turnaround projects, contract control and vendor management when you **ASK THE SOURCE**. Go to www.cio.com/experts.

Think things move fast in your operation?

Check out the chain of events behind the birth of the Do Not Call Registry. Look for the **Do Not Call Time Line**, only online with the Web version of "How the FTC Rescued the Dinner Hour" or at www.cio.com/printlinks.

LEARN MORE

Keep Up with Privacy

Are you a privacy champion? (See **Privacy Is Your Business**, Page 48.) To be one, you have to educate yourself about regulations and deploy technologies that can help monitor access, as well as develop formal processes for data access. Putting policies in place is a big help. For more tips and updates, bookmark the **Security and Privacy Research Center**. Go to www.cio.com/security.

READ MORE

The Big IT Debate: E-Voting

This year's presidential race is about who controls the niche marketing campaigns in which IT systems will play a primary role (see **IT on the Campaign Trail**, Page 72). But, a more contentious debate is brewing over electronic voting. Will it ensure the integrity of our system? Or is it too rife with security gaps and software bugs? Our front-runners to fixing the most worrisome problems can be found in **E-Democracy**. To find the story, go to www.cio.com/printlinks.



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E-mail letters@cio.com

Phone 508 872-0080

Fax 508 879-7784

Address CIO Magazine, CXO Media Inc.,
492 Old Connecticut Path, P.O. Box 9208,
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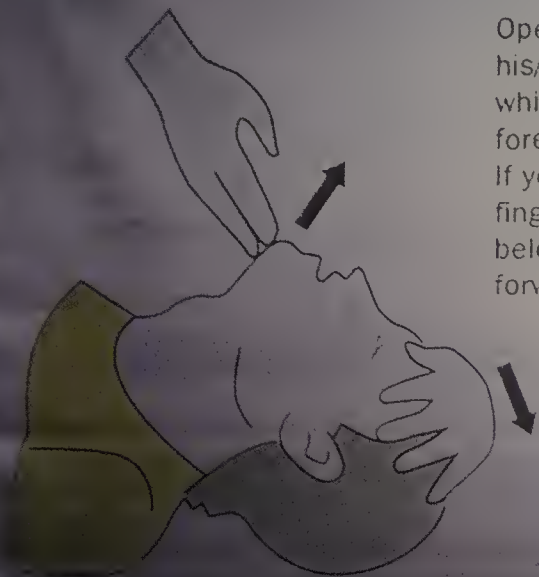
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3 OPEN THE VICTIM'S AIRWAY



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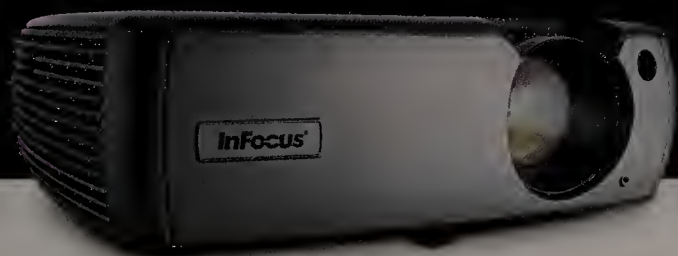
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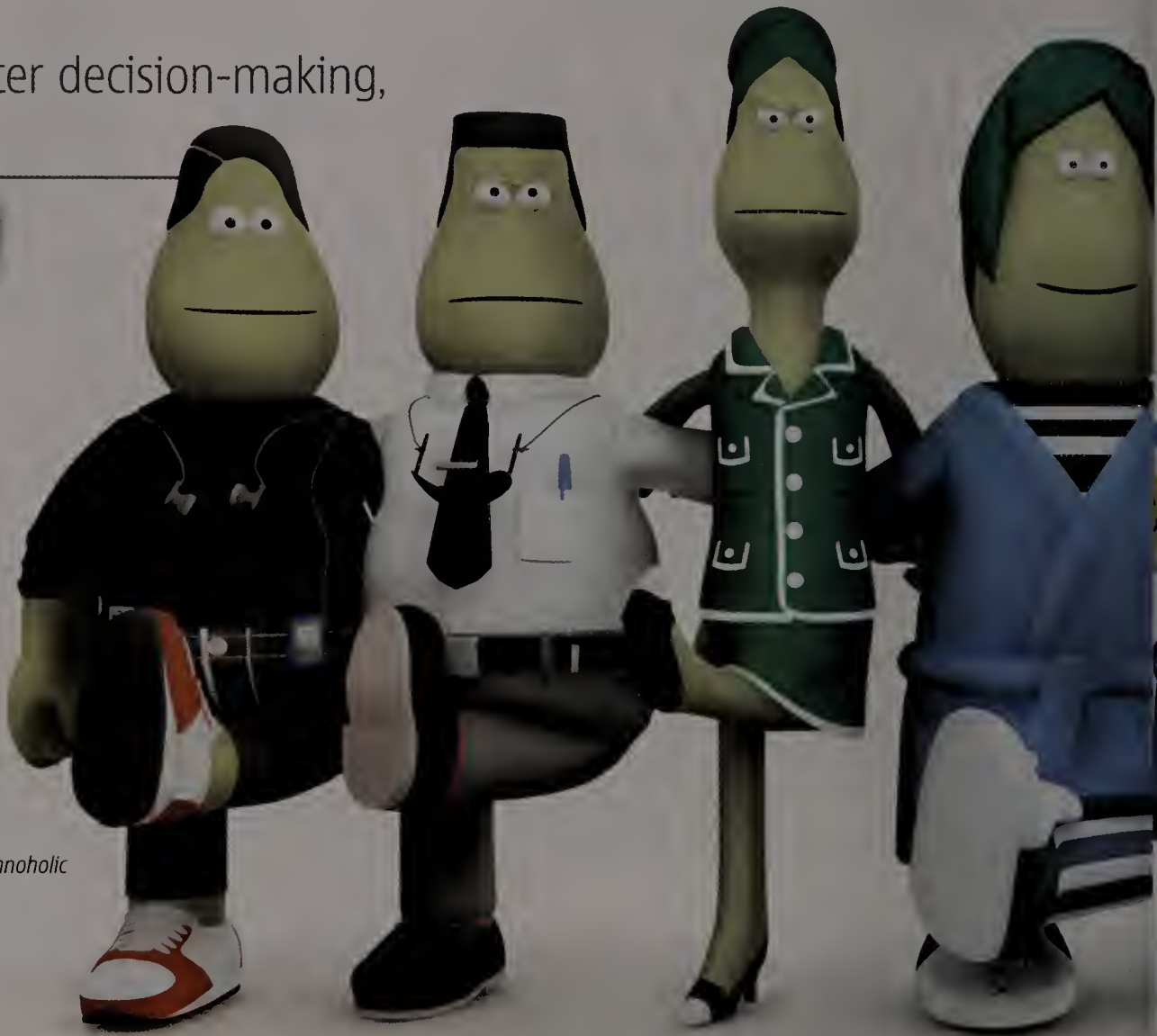
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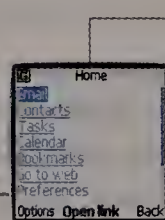
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Reader Feedback

MUCH ADO OVER ANALYST ANALYSIS

We received lots of feedback on our March 15, 2004, cover story by Scott Berinato, "Bad News for Analysts, Good News for CIOs." In general, the feedback was supportive and validated the story's basic thesis—that CIOs believe they can lower their spending on advisory services without affecting the value they get in return, and that one way to do that is to minimize or eliminate subscription services. However, we did receive some criticism, most notably from the analyst firms themselves.

As a point of clarification, we did not intend to suggest the research industry was no longer relevant. Rather, our article was centrally concerned with addressing the question of whether analyst firms can figure out how to price and package their research in a way that's more beneficial and palatable to CIOs.

Many of the research executives who called or wrote took exception to our statement that the experience base of industry analysts was decreasing. In addition to the average years of experience number that we cited (attributed to and checked with a reliable source prior to publication), we heard from dozens of CIOs that the analysts they were granted access to had gotten younger and less experienced in the past five years, and that getting access to the more experienced analysts for individual interactions was proving more difficult and more expensive. However, we did not do our own research into this data, and the presidents of Forrester, Meta and IDC all told us that the average length of experience of their analysts is higher today than at any time in their firms' history. —The Editors

ANALYSTS TALK BACK

Regarding the article by Scott Berinato, "Bad News for Analysts, Good News for CIOs," I offer the following comments.

- Mr. Berinato states that "in the past decade, the average experience of analysts has shrunk from more than 10 years to about three." At Forrester, the length of experience has been increasing over the last four years, with a current average of 12.5 years. We believe that the experience level of our analysts is typical for the industry.

- The article asserts that research company business models do not serve clients who want to buy "by the drink." In the case of Forrester, all components of a subscription service

can be bought separately.

- Berinato contends that research companies cannot and will not reinvent pricing models. Over the last four years, there has been a tectonic shift in research pricing. Giga, Gartner and Forrester have all discarded the old model of pricing by seat and by service in favor of no-barriers, seat-only pricing.

- The article states that analyst companies have "downplayed personal relationships...in favor of products." In the age of Google, research must be accompanied by a personal touch—and virtually every major research company has added it in the last three years.

Research will remain valuable to



smart \$1 billion-plus companies that hedge risk by carefully studying and analyzing their decisions before acting. And as with the server, telecom, software, database, router and mainframe markets, the research business will continue to recover as tech spending returns to normative levels.

George F. Colony

Chairman and CEO, Forrester Research
gfc@forrester.com

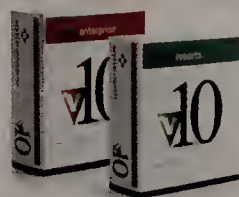
Senior Editor Scott Berinato replies: Regarding the shift to "no-barriers, seat-only pricing," CIOs we spoke with said they like this model even less than the older model, which, while more complicated, offered more segmented subscription options. They said they could spend far less and get the same research using one-off pricing and reducing subscriptions, which is what they had done or were planning to do.

You may be surprised to hear that I agree with the premise of Scott Berinato's article on the IT advisory services industry.

It is absolutely true that traditional



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research, based predominantly on content access, is worth less than it used to be—and that it is a buyer's market. In fact, there isn't any part of the IT market over the past four years that hasn't been a buyer's market. Frankly, the change required in IT research services was one of the reasons I took the job as CEO of Meta Group in August 2002. Some of us did "forecast a market trend" relating to declining interest in the traditional research subscription model, and I saw a chance for Meta Group to lead a transformation in the industry.

However, the downside of the premise presented by Berinato is not that compelling.

The proliferation of the Internet does enable organizations to access more information. Still, you simply cannot Google your way through the complex issues that most IT and business organizations are facing. CIOs

with more effective execution and implementation.

It is precisely these client demands and market changes that have fundamentally driven Meta Group's transformation into a "trusted adviser" role.

So, yes, I agree that traditional IT research content is worth less than it used to be. But providing increased strategic capabilities to help IT organizations become "best in class" is worth much more.

Fred Amoroso

CEO and President, Meta Group

ajamoroso@metagroup.com

I'm confused by the apparent "newness" of this subject. Several years ago, savvy investors were constantly questioning the presence of research company footnotes in business plans. No intelligent executives were ever really betting the farm on unsound data and baseless assumptions. Or were they?

With fewer vendors, fewer choices and fewer "must-haves" to invest in, what CIOs really need is somebody to help them understand how to best solve business problems—not just evaluate technologies.

—Joshua Reynolds

are now required to provide significantly more value to the business in terms of revenue opportunities or business transformation—in the face of cost control, accelerated time frames, increased risk management challenges and technology complexity.

Essentially, they desire to excel in the delivery of IT capability to their organizations and more closely align business and IT. This desire requires increased accuracy and timeliness in their decision making, as well as the ability to create better strategies

From the competitive intelligence industry (where I live and work), this type of research looks a lot like secondary research, meaning that it's accessible through open-source information or subscription databases and publications, with little emphasis on highly sensitive interviews as a source of information specific to client intelligence requirements.

Research is *not* intelligence; intelligence is the result of great research analysis. Bad sources and faulty data feed bad analysis, period.

As an interesting aside, while this whole subscription world of deep thinkers has eroded, the competitive intelligence industry has flourished, even with an emphasis on transactions versus subscriptions (though many of us perform monitoring services, but even then there is heavy use of primary research). Perhaps the fact that we never ever syndicate our findings beyond the walls of our clients is what has made our research most valuable all along, particularly where the information obtained could never be had through traditional survey instruments.

If everybody is eating off the same plate (from Gartner to Google), how can any executive expect to have a serious information advantage?

David Carpe

Principal and Founder

Clew LLC

Good research is worth its weight in gold.

As a former Gartner analyst myself, I know that what you get out of research depends on how much you put into understanding it. Knowing what questions to ask and how to read research is invaluable.

Like many other information-based services that burgeoned in the 1990s, research firms are just experiencing the same contraction in revenue that other companies have because now the universe of *relevant* information to analyze has shrunk.

With fewer vendors, fewer choices and fewer "must-haves" to invest in, what CIOs really need is somebody to help them understand how to best solve business problems—not just evaluate technologies. And good research, understood well, can help them do that.

Joshua Reynolds

Senior Vice President, Analyst Relations

Hill & Knowlton



“Deploying our ERP application on our tight deadline would have been impossible. With Citrix, we not only made our deadline, we also drastically reduced our deployment costs.”

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Anonymous
Senior IS Vendor Manager

I recently went to a trade show and a seminar session, something I hadn't done for more than five years. I saw the same companies (now with different names) presenting the same PowerPoint slides as they did years

CIOs in this decade will thrive.

French Caldwell
VP and Research Analyst

The analysts really shot themselves in the foot during the boom with high prices and lofty forecasts. Back in 1998, one of the analyst companies would always show an Internet forecast that displayed a hockey-stick pattern, indicating the Internet boom.

A valid question to ask is, If they were so smart, how come they missed the end of the bubble (as well as numerous other trends)?

Anonymous

The original IT research/advisory model that flourished in the '80s and '90s was predicated on a quickly evolving technology market. The Gartners and Metas of the world

IT analyst megavendors, they have some huge structural issues to overcome. As public companies, their visible P&L makes it difficult to attract, invest and retain the experienced talent who can deliver the kind of value needed in today's market.

In my work with CIOs and CFOs over the past few years, a more personal, experienced opinion is required—and one that is increasingly specific to the industry segment in question. The catch-22, however, is that creating unique value is an expensive thing to do and is hard to deliver in a meaningful way when using a leveraged model.

In my opinion, CIOs, CTOs and, increasingly, CFOs should look to a balanced group of "trusted advisers" who can add value in today's world. While they may rely on one major IT analyst megavendor to provide macro trends and some level of decision support, they should also develop relationships with experts in specific areas of deployment who are true subject matter experts (with 20-plus years of experience) or who can add value in a differentiated way.

At the end of the day, it's all about adding value and not what it costs. Unfortunately, many of the IT analyst market leaders have lost touch with the underlying value proposition that they were built on in the first place. Finding the right mix for the 21st century should be an interesting challenge for provider and client alike.

William S. McNee
Founder and CEO, Saugatuck Technology
bill.mcnee@saugatech.com

In my opinion, CIOs, CTOs and, increasingly, CFOs should look to a balanced group of "trusted advisers" who can add value in today's world.

—William S. McNee

ago. The "analysts" were still saying, "It's going to be a \$5 billion market in five years," just like they did 10 years ago.

I used to use them to quantify getting investment money for startups, but now there is a need for real substance.

J. Dabnor, President
Business Development Partners LLC

While advice on rapid technology changes drove analysts firms' success in the '90s, the ability to advise effectively on the CIO's management agenda of globalization and business competition will determine future success. The firm that gets ahead of the rapidly changing business and management environment facing

helped clients save money, reduce decision-making time and lower their risk profile during a time of rapid change.

Over the past five years, the world has changed. IT spending has flattened, the number of key IT infrastructure and application decisions has declined, and the Internet has clearly provided a viable and free research alternative (albeit with a less qualified opinion).

However, in my 15-plus years in the business (and as a former vice president and research fellow at Gartner), CIOs and CTOs will always pay for value if they believe they are getting a good return on their investment. While there is still a role for the

What Do You Think?

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trendlines

the **NEW** the **HOT** the **UNEXPECTED**

Edited by Michael Goldberg

PRIVACY

On Eve of IPO, Google Gets Earful on Gmail Plan

THE FOLKS AT GOOGLE are used to searching the wide Web world. But when they announced a new free e-mail service that scans users' e-mail text so that relevant advertising can be inserted into the messages, it was users from all over the world who came looking for Google.

What sounded like a good idea to Google's leaders (and may still turn out to be a valuable advertising vehicle) brought howls of protest from consumer privacy and civil liberties groups in Europe and the United States, urging Google to rethink its proposed service called Gmail.

Google announced Gmail April 1 and cited it as an asset in the company's IPO filing April 29. Gmail as planned is a free,

Web-based e-mail service similar to Microsoft's MSN Hotmail and Yahoo Inc.'s Yahoo Mail, though Gmail's 1GB of storage is much more than these other popular free services offer. Another difference: Google plans to scan e-mail and add advertisements that its systems identify as relevant to the messages. Additionally, the Gmail privacy policy warns that messages, including those "deleted" by a user, may still be stored in the system, even long after users have closed their accounts—something that some privacy campaigners believe may be in conflict with U.S. and European data protection

and privacy laws.

"This is one of the hottest issues we've ever dealt with in terms of Internet issues," says Simon Davies, director of London-based advocacy group Privacy International.

In April, Privacy International filed a formal complaint with the U.K.'s information commissioner office (ICO) requesting that action be taken against Gmail. The group plans to file complaints in other European countries, Davies says. Additionally, Democratic Sen. Liz Figueroa of California says the privacy issues are leading her to consider proposing legislation to stop Google from launching its Gmail service in its present form.

As these notes of protest arise, Google seeks to assure the Web-going public that its Gmail service is in the early testing phase and that it is still taking shape. "Google has the highest regard for the privacy of our users' information. We have taken great care to architect Gmail to protect user privacy and to deliver an innova-

Continued on Page 30

DISASTER RECOVERY

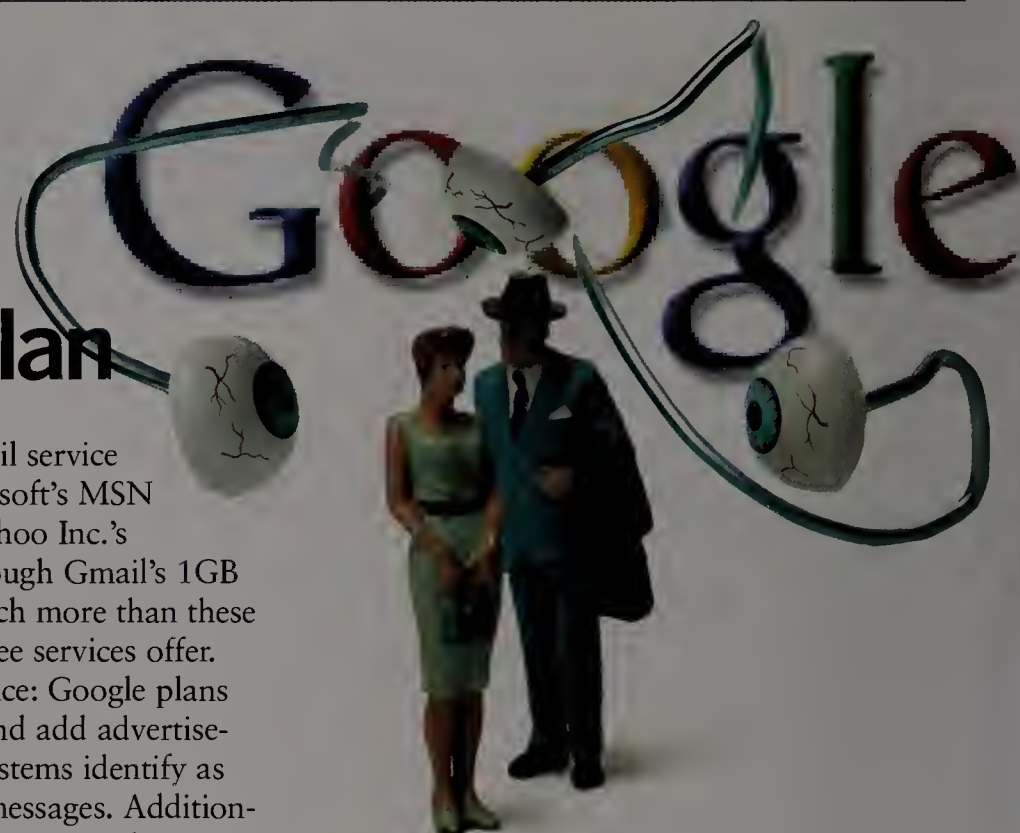
P.S. on the Blackout: Mind Your IT

ON AUG. 14, 2003, a power company in northern Ohio called FirstEnergy missed signs that there were potential problems in its portion of North America's electrical grid. The events that followed left an estimated 50 million people in the Northeast and Canada in the dark. It's all laid out in the widely reported findings of a joint U.S.-Canada task force that investigated the causes of the blackout and recommended what to do to avoid big-scale outages in the future.

Among the points made in the March 31 report was a note many CIOs would appreciate:

Mind your network infrastructures. Emergency management system and IT staff at utilities must monitor the quality of computer networks that provide data on power supplies and demand. Make sure the networks can be restored quickly in the case of downtime. Set up disaster recovery plans. Provide adequate staff training, including verbal communication protocols "so that operators are aware of any IT-related problems that may be affecting their situational awareness of the power grid."

The commission didn't say so, but you could call these procedures best practices.





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W I R E L E S S S T A N D A R D S

New Technologies Hit Mainstream

FEDEX AND UPS are the pioneers of wireless systems implementations, and the rivals continue to pursue strategic uses of the technology (see "UPS Vs. FedEx: Head-to-Head on Wireless," Page 66). But now that the core wireless technologies such as 802.11b, Bluetooth, and general packet radio service (GPRS) are standards-based and supported by a growing list of developers, more enterprises have deployed wireless applications at lower costs—and without the heavy investment that FedEx and UPS have made over the years. The following are some examples from the transportation and distribution industries.

Old Dominion Freight Line is employing wireless systems similar to those used by UPS and FedEx. Its 2,400 drivers will use handheld terminals that capture delivery information by scanning packages and then transmit it to Old Dominion over GPRS networks. They also can alert drivers to unplanned pickups, with details on what to expect. The Thomasville, N.C., company may use the Bluetooth radio to transmit receipts to a portable printer so that

their invoices can be delivered faster, which also accelerates receipt of payment, says Barry Craver, senior application development manager at Old Dominion. And 802.11b radios will let drivers automatically download delivery routes and package inventories to their handhelds overnight, enabling drivers to spend less time at package centers.

Corporate Express, a Broomfield, Colo., distributor of office supplies, has put wireless LANs into 20 of its 30 North American centers, in spaces ranging from 50,000 to 300,000 square feet. A wireless LAN "allows the ability to move around, and you have the ability to change your layout without having to rewire," says Tim Beauchamp, senior vice president of distribution operations. Corporate Express typically gets a 30 percent return on investment from wireless applications, he says, but it got an even higher ROI from an unexpected application: a voice system from AccuCode. With that system, warehouse staff wear a headset attached to a mobile device that connects via Wi-Fi to the central server. As a

worker scans a package, the server relays instructions via synthesized voice, which Beauchamp says is easier for staff to understand than peering onto a handheld's small screen in varying light conditions. The company is now deploying wireless PDAs for mobile proof of delivery.

Japan's **NYK Logistics** uses active transponders and 802.11b networks in its Port of Long Beach, Calif., shipment yards to track and route containers received from cargo ships and being transferred to trains and trucks. (See "One in a Thousand" at www.cio.com/printlinks.)

Seattle-based **Alaska Distributors** uses code division multiple access 2000-based PDAs to gather real-time information on beverage delivery to stores throughout the Pacific Northwest, as well as to transmit new orders.

Another beverage distributor, **Elyxir Distributing** in Watsonville, Calif., uses GPS-enabled cell phones to track drivers' locations and gather time-sheet information. —Galen Gruman

Google E-Mail

Continued from Page 28

tive and useful service. While we're still in a limited test of Gmail, we welcome and appreciate feedback on how we can

look at the "to" or "from" fields, only the subject and body of the mail.

An ICO spokeswoman says that as long as Google "makes it clear that it is monitoring e-mail usage and passing that information on for marketing purposes, there shouldn't be a problem." The ICO

The European Commission may end up looking at Gmail, according to Peter Sandler, a Commission spokesman. One potential problem with Gmail, Sandler says, is the "opt-in" directive that was added to the statute books of the E.U. member states last October. The measure puts the onus on companies to obtain permission from individual users to send them unsolicited commercial e-mail. "There is an obligation of member states to make sure that the confidentiality of messages are insured. So that could have implications for companies that are scanning and tracking information," Sandler says.

Meanwhile, Google will have weightier messages to interpret. Cofounders Sergey Brin and Larry Page, in their IPO filing slated to raise \$2.7 billion, vowed to resist market pressures to focus on long-term goals. We'd like to read the e-mails buzzing around Wall Street on that one.

—Laura Rohde and Peter Sayer

Google's IPO filing on April 29 slowed the SEC.gov website. The success rate for downloading the agency's homepage dipped to 20 percent, according to website tracker Keynote Systems.

improve the offering for our users," says a Google spokesman.

Google Vice President of Engineering Wayne Rosing says that a Gmail user's name is not sent to the ad server, and when the system scans the e-mail, it does not

spokeswoman adds that representatives from Google working with the ICO were surprised by the reaction to its proposed e-mail service. "I don't think they thought this was going to be a problem," she says.



SECURITY
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As Chief Security Officer at Exostar, Jeff Nigriny has a lot on his mind. After all, clients like Rolls-Royce place their trust in Exostar's online collaboration tools. One breach, and years of work, perhaps billions in assets, might be compromised. But with VeriSign's Intelligence & ControlSM Services, Nigriny has been freed. Freed from worrying about the day-to-day issues, like tracking intruders and maintaining the firewall. And freed to pursue new strategies and product applications leveraging the real-time information and response capabilities he now gets from VeriSign. He's probably working on other initiatives as well, but he didn't mention them. This guy knows how to keep a secret.

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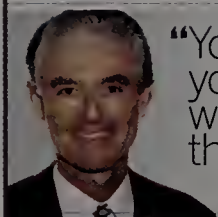
On the Move

By Meredith Levinson

Three Questions for Would-Be CIOs-for-Hire

YOU'VE LEFT YOUR JOB, and you're freelance consulting while looking for another CIO post. The problem is, no attractive positions are available, and there aren't enough hours in the day to focus on your job search, work on client engagements and build your consultancy. So what do you do?

If you're a committed, connected and self-directed IT professional with a decade of



"You don't have to spend your time marketing while you're focused on the client assignment."

—Mike Anzis

management experience, you could look at joining one of the CIO-for-hire organizations—such as Tatum CIO Partners, Topologe and If & Then—cropping up. These firms place IT executives in short-term positions with small to midsize companies temporarily in need of a CIO's savoir faire. Sound good? Well, as with every kind of job, there are questions to answer. Here are three.

Question 1:

How much business control do you want?

The CIO-for-hire consultancies I talked to are run as partnerships. When Mike Anzis, 59, an independent consultant for three years, was considering a job offer with

Tatum in fall 2003, he was initially leery of the company's partnership business model. Tatum partners share the revenue they generate with other partners, and he was concerned this would be a big change for him.

But now that Anzis has been with Tatum for eight months, he sees the upside of partnership: "Because you've got a number of partners looking out for you and your next assignment, you don't have to spend your time doing marketing while you're focused on the assignment. [The firm's] mission is to get you your next assignment."

Question 2:

Can you wield influence without authority?

After two years during which he held three vice president-level jobs with e-business platform provider Genuity (now owned by Level 3 Communications), Pat Gillogly, 60, was delighted to join Tatum as a hired gun where he'd be able to get in, get out and get things done for companies in need.

"As an interim manager who doesn't have a long-term stake in the [client] company and is therefore much more immune to the politics of the organization, you can take a hard look at the people, the processes, what works, what doesn't and then make some objective recommendations for the CEO," says Gillogly.

But effecting change as an outsider isn't

easy. No one knows that better than Jack Maguire, a 55-year-old CIO-for-hire with Topologe in Burlington, Mass. He says he was tested on the first day of his first engagement with Topologe by the client's IT staff. "Any staff is concerned about any new body. They don't want to have someone [off the street] telling them what to do when they're not sure if you actually know what they're supposed to do," he says. To earn their trust, Maguire says you might have to show them that you can do their jobs. "Once they realize that you understand their functions, they'll be behind you," he says.

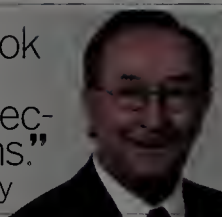
Question 3:

Can you deal with an uneven work rhythm?

Joining a firm like Tatum or Topologe is a good move for someone who likes the excitement of working with a variety of companies on short-term assignments. But it's no semiretirement: Many organizations

"You can take a hard look at what works, what doesn't and make objective recommendations."

—Pat Gillogly



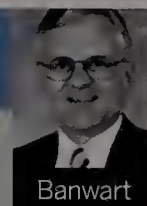
that hire temporary CIOs have growing pains or are in crisis mode. You can expect to work 50 to 60 hours a week when you begin an engagement, Maguire notes.

Other times, the pace isn't so fast and you can find yourself "sitting on the bench," says Maguire, who was between clients when I interviewed him in March. Gillogly didn't take on an interim CIO position until several months after joining Tatum because he was waiting for the right client match. Because you're making money only when you're working for a client, you need to have some financial stability to do this kind of work. And when you're not working for a client, you have to go get new business.

Says Maguire, "If you want a 9-to-5 job, this isn't it."

NEWS OF OTHER MOVES

Caterpillar says it will redeploy top IT executives **Sidney C. Banwart** and **John S. Heller** effective July 1. Banwart, CIO and vice president of Caterpillar's systems and processes division, will head up the heavy-equipment maker's human services division. Heller, director of Caterpillar's global information technology solutions group, will take over as CIO and vice president of systems and processes. Both are Caterpillar veterans: Banwart joined as an engineer in 1968. Heller has worked at the company since 1973.



Banwart

DATA INTEGRATION

strategicdirections

JUNE 1, CIO/JUNE CSO ■ VOLUME 6, NUMBER 2



The Integration Imperative:

Creating New Value
*By Leveraging
Legacy Systems*

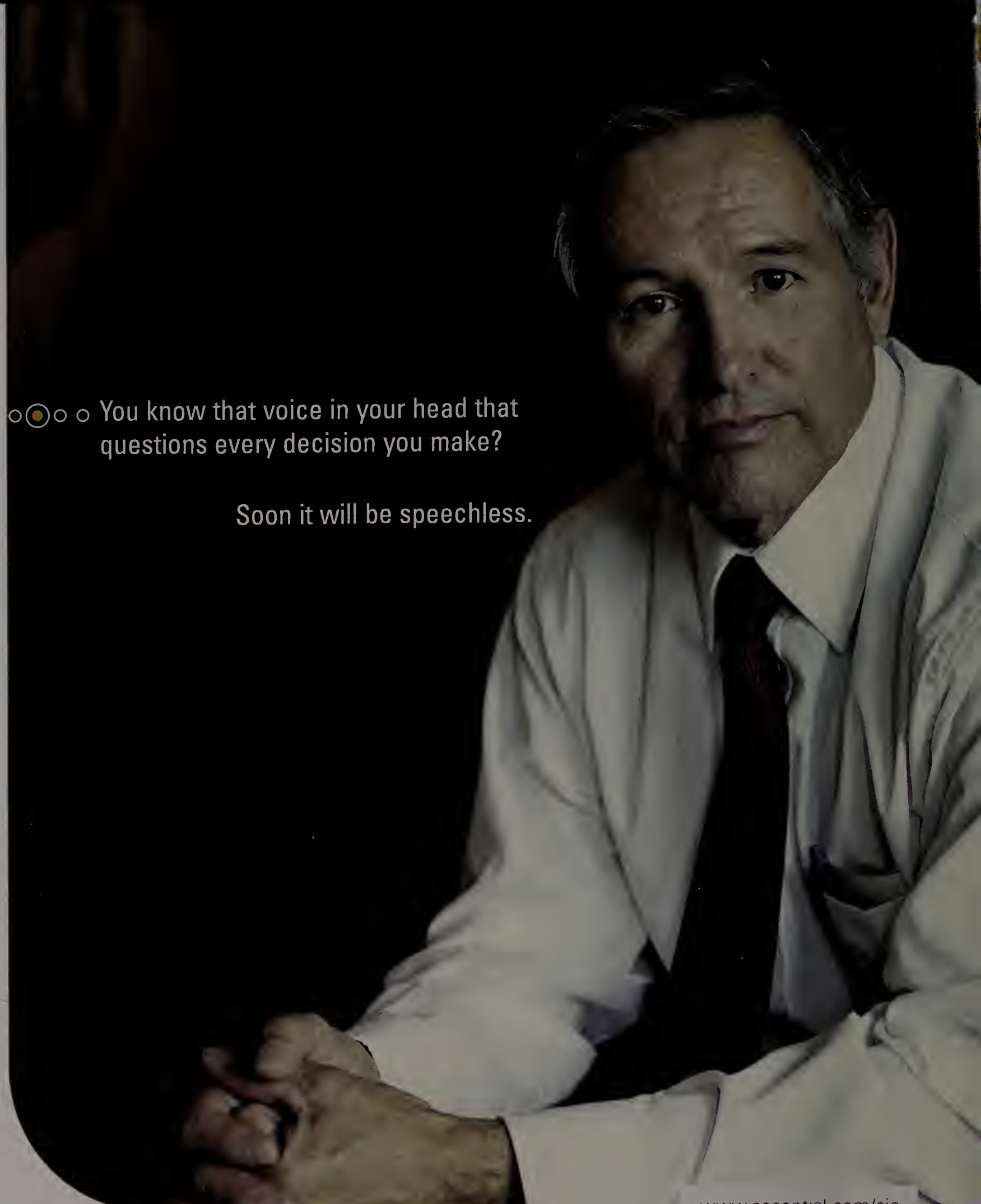
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NETWORK SEGMENTATION

By Kris Zupan, CEO/CTO, e-DMZ Security

[Editor's Note: In our April 2004 edition, *Strategic Directions* inadvertently included an unattributed summary of Kris Zupan's "Network Segmentation" advice. With permission from e-DMZ Security, the piece is reprinted here in its entirety.]

As many have seen, I have been quoted lately discussing Network Segmentation as an increasingly important piece of a company's IT security policy. Network segmentation is not a new concept, and definitely not something I can take credit for designing. It has been discussed since routing protocols became commonplace in business networks, and my first practical application of network segmentation occurred in the mid 1990's.

The problem then was the same as it is now; routable protocols like TCP/IP are designed to be able to go anywhere from anywhere. The difference between the late 90s and today is that there are more reasons to connect networks (ranging from ERP systems like SAP to remote support requirements exacerbated by corporate downsizing) and more danger in these connections (as evidenced by Code Red, Nimda, Slammer, and Blaster).

While many companies have embraced segmentation to control the flow of routable traffic, I predict that by the end of 2005 this will become the defacto model for companies that have special purpose networks. Networks like Funds Transfer Networks,

Process Control Networks, Clinical Trials, and R&D will all have some form of segmentation to protect against the next wave of network pathogens. The good news is that the tools at IT's disposal today have matured at approximately the same pace as the exploits, and solutions exist that provide this capability today. The bad news is that companies that have not utilized these solutions may find a segmented network unmanageable.

My suggestions for companies that are exploring this approach (Network Segmentation) are as follows:

1. Make sure that you leverage the experience of those who have already successfully implemented network segmentation on a scale similar to your network.
2. Understand your network before designing any segmentation. Though TCP/IP growth has made many other network protocols seem less important, you may find significant parts of your business running other protocols.
3. Understand how segmentation affects your operations model. If you use SNMP or ICMP as your monitoring protocol, will segmentation affect your Service Levels?
4. Understand the details of the traffic passing between the networks you desire to segment. Don't take a one-day sample.
5. Start small. Understand your Enterprise strategy, but do not try to turn it all on at once.

DATA INTEGRATION strategic directions

JUNE 1, CIO/JUNE CSO • VOLUME 6, NUMBER 2

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CORRECTION

In our April 2004 edition, *Strategic Directions* inadvertently published outdated information regarding General Electric's results from its use of Courion's PasswordCourier self-service password management solution. We regret the oversight.

CONSTRUCTING THE Agile Enterprise

IT'S HARD—BUT NECESSARY—TO MAKE BUSINESS LOOK EASY

With each passing year, businesses have less time to do business. A few years ago, for instance, responses to call center inquiries took about eight hours. Now a typical response occurs in 10 seconds. Building a personal computer used to take six weeks; these days it's accomplished in just 24 hours.

Staying competitive and successful as the velocity of business processes escalates means

addressed with a revolutionary approach to software and system design."

Yet few enterprises can afford to junk the multi-generational IT infrastructure they've spent decades creating. Building a whole new IT environment from scratch is not only prohibitively expensive, it's also impossibly disruptive to the business.

The solution? Integrate legacy systems with each other and with emerging capabilities to inject new value into the enterprise.

"Extending the life of legacy systems and data stores by remodeling and integrating those components with new application initiatives is essential for running a business in zero-latency mode," says Nitschke.

THE DANGERS OF COMPLEXITY

Between now and 2007, 65 percent of enterprises will mismanage technological complexity and risk.

Outcome: Stifled productivity and earnings, cost inflation of at least 25 percent.

Source: Gartner, Inc.

rethinking and reengineering not only the processes themselves but the IT systems and networks that help manage and execute them. Isolated, stovepipe applications and data stores just won't cut it anymore.

"Traditionally, IT departments have supplied solutions that provided approximations of the business requirements and functionality actually needed. Worst-case scenario was that the business had to change its processes to meet the requirements of the IT solutions," says Markus Nitschke, vice president of corporate marketing at Attachmate Corp. "This situation is clearly unsatisfactory and needs to be

The Information Daisy Chain

But the process isn't easy, according to AMR Research. Consider the following (from the 2003 AMR Research article "Rethinking Integration Decisions to Support Your Customer Requirements"):

- The typical company has five order management systems and four order fulfillment systems.
- Many companies require customers to place different orders through separate systems.
- Many companies have little or no linkage between their front- and back-office systems.
- In most organizations, customer data is not centrally managed, resulting in errors, duplication and task redundancy.

According to the research company IDC, organizations have an average of 49 applications and 14 databases that need to be integrated. Generally, no

more than 20 percent of customer data is housed in a single location.

That's because in most organizations, minimal integration is built into new development projects. By pulling in only the data and processes required by the new application, companies have created unwieldy daisy chains of data that support a frail and costly tangle of software.

Those that have attempted large-scale integration have had to use brute force to construct customized interfaces to legacy environments—which is expensive and never ending.

“Application integration, software development, process automation/workflow and business intelligence are no longer discrete disciplines that CIOs can afford to practice independently,” says Trevor Matz, InterSystems Corp.'s managing director of application integration.

Although the enormous volume of transactional data and messages generated by corporate silos—such as data, applications and systems—is processed in a point-to-point and therefore very disjointed fashion, it needs to be pooled, shared and married to business processes, often in as close to real time as possible, and without sacrificing security.

“To ensure sound system security when integrating data, CIOs should consider real-time solutions that record operational activities as they occur on

Hiding Complexity With Services

Cost-effective integration requires something else: hiding the arcane complexities of earlier generations of IT infrastructure—not only the mainframe monoliths and subsequent two-and three-tiered distributed architectures, but also the data, the business logic, the user interfaces and the process workflows—behind layers of abstractions based on industry-accepted standards.

INTEGRATION CHALLENGES

- Avoiding culture wars: Partnership and merger/acquisition demand cultural as well as technical integration
 - Unifying new technology and legacy systems
 - Coping with the complexity of integrating many diverse systems and environments
 - Coordination and cooperation
 - Lack of sufficiently evolved standards, immature technologies
 - Lack of appropriate skills
-

For this to work, companies must do two things:

- Use an agreed-upon abstract language to translate the arcanities of their data, business logic, operating environments and even business processes.
- Encapsulate both the processes and much of the technical knowledge and skill needed to engage in them as modular services.

“Extending the life of legacy systems and data stores by remodeling and integrating those components with new application initiatives is essential for running a business in zero-latency mode.”

Markus Nitschke, vice president of corporate marketing at Attachmate Corp.

source applications,” says Nigel Stokes, CEO and president, DataMirror Corp. “The solutions should be capable of tracking changes made to an application database, identifying users and recording other pertinent information. With real-time auditing capabilities, companies can take advantage of an integrated enterprise while ensuring all data remain secure, end to end.”

Once that happens, data, applications and business processes can be universally accessed, shared, reconciled, recombined and analyzed automatically and without the aid of expensive experts. And companies can continue to use (for a while, anyway) their legacy databases, applications and platforms.

Furthermore, the service modules in effect make corporate IT functionality available on the network

The Power to Manage, Monitor and Protect Corporate Data in Real-Time

COMPANY PROFILE

DataMirror is a leading provider of live, secure data integration and protection solutions that give companies the power to manage, monitor and protect their corporate data in real time.

Since its inception in 1993, DataMirror has continued to position itself as an innovator and thought leader in the real-time data integration market and has played an instrumental role in pioneering the concept of the real-time enterprise (RTE).

UNLOCK *the experience of now*™

DataMirror's comprehensive family of LiveBusiness™ solutions helps customers easily and cost-effectively capture, transform and flow data throughout the enterprise. DataMirror unlocks *the experience of now*™ by providing the live, secure data access, integration and availability companies require today across all computers in their business.

DataMirror is a publicly funded, financially stable company with a strong business model that has helped the company progressively grow quarter over quarter and year over year.

TREMENDOUS ROI

With more than 1,800 successful customer implementations worldwide, DataMirror is an established leader in the data integration and resiliency market. DataMirror's customer list reads like a "who's who" of industry leaders—Baxter Healthcare, Campbell Soup, Debenhams, FedEx Ground, Harley-Davidson, Pfizer, Tiffany & Co and

Union Pacific Railroad, just to name a few.

These and other customers have gained tremendous ROI from their DataMirror software implementation. Examples include:

- A financial services organization integrating 15 million transactions each day
- A food and beverages company saving 38 person-days of development work on its data warehousing project.
- An insurance company bringing to market a new web initiative in half the scheduled time
- A mutual funds company reducing system recovery time from 12-48 hours to 30 minutes
- A telecommunications company estimating saving US\$350,000 an hour in downtime costs
- Most significantly, a Fortune 500 manufacturing company reporting saving US\$2.9 million over two years in data warehousing costs and US\$30,000 an hour in downtime costs, while reducing overall IT spending by approximately 20 percent.

To discover how your business can benefit from DataMirror's solutions, contact a representative today:

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as discoverable entities that can be recombined by users to invent new capabilities, with little or no help from IT staff.

It's not hard to see how powerful this kind of abstraction—collectively called web services and service-oriented architecture—can be both to IT integration efforts and the automation, monitoring and management of business activities.

"Service-oriented architecture implemented across diverging IT systems within an organization will not only solve the integration challenges, but also put the infrastructure in place to release future applications that meet business requirements more effectively, in a less time-consuming fashion," says Attachmate's Nitschke.

For example, at the Florida Department of Children and Families (DCF), as much as 80 percent of client information resides in legacy systems that would cost hundreds of millions of dollars to replace. Fortunately, DCF has found a way to save 90 percent of that potential expense. Using InterSystems Corp.'s Ensemble platform, the DCF has integrated the information in 59 different applications running on a variety of operating environments into a composite portal application, called OneFamily, that provides a single view of all relevant data about an individual client.

OneFamily has improved DCF services delivery and eased IT support requirements. And thanks to Ensemble, its relational database support requirements were cut in half.



MAXIMIZE YOUR IT INVESTMENTS WITH **SECURE, REAL-TIME DATA SOLUTIONS.**

Looking to squeeze more performance from existing systems and applications? Want to spend less time, resources and costs on data integration initiatives? You can achieve these significant returns by implementing DataMirror LiveIntegration™ solutions for your real-time data integration needs. Discover how DataMirror's live, secure data integration solutions can deliver 360-degree insight into business operations, allowing you to make more informed operational, strategic and tactical business decisions, improve service levels, and optimize and extend existing IT investments to reduce total cost of ownership.

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“Application integration, software development, process automation/workflow and business intelligence are no longer discrete disciplines that CIOs can afford to practice independently.”

—Trevor Matz, InterSystems Corp.’s managing director of application integration

Event-Driven Architecture: Do You Subscribe?

Another integration challenge lies in managing business processes that are event-driven. They need to respond to less predictable, multiple asynchronous events occurring simultaneously.

Event-driven architecture (EDA) addresses such circumstances with applications composed of services that send messages when multiple asynchronous events trigger them. The messages move between decoupled service modules that are totally unaware of each other.

When an event occurs, an event-driven application sends a message to middleware software, which passes it on to subscribing programs wanting to be notified of such events. Thus, the message gets sent to many at once. Rules-based event processing agents monitor events, sometimes thousands of them at once and undertake actions such as filtering, mapping and applying constraints to event data.

EDA designs are effective for:

- Large distributed applications aimed at unpredictable, asynchronous or parallel activities
- When data has to go to multiple destinations
- Quickly and inexpensively reusing business components in new business processes

EDA standards are incomplete—developers are still learning their way around complex event processing. Moreover, key parts, such as development tools, security and management capabilities, still must be assembled by developers.

Nevertheless, observes Attachmate’s Nitschke, “Enabling legacy data sources and applications by delivering them as web services can be the initial step toward a full service-oriented architecture. Service-oriented and event-driven architecture can be

applied not only to new development and design efforts, but to all existing legacy assets as well.”

Solutions to the complexity and confusion that typify much of data, application, system and process integration are not just visible on the horizon. They’re here. It’s 3 a.m.—do you know what your main competitor has integrated?

Leveraging The Mainframe: Where 60 Percent Of Corporate Data Still Resides

LONG THE HEART OF BUSINESS IT INVESTMENT, mainframe operating systems and the host-class machines on which they run continue to serve as key platforms for critical corporate workloads, like online transaction processing (OLTP) and large single-system image databases. In fact, IDC estimates that in 2002, enterprises spent \$12.8 billion on these high-end systems.

Although burdensome to maintain and outdated in technology, companies hold on to their legacy systems for several reasons. The first is cost: the 200 million lines of Cobol code still in use today would cost in the neighborhood of \$7 billion to replace (at \$35 per line of code). What’s more, mainframe environments are easier and cheaper to control—and easier to secure—than distributed computing environments.

But mainframe applications are



Speed Matters

Examples of Integration in Action

"Nothing is more frustrating to someone than stale data—unless, of course, it's no access to the data at all," observes Jim Lupton, vice president of information systems at American Fidelity Assurance Co. "It's frustrating to the customer not to have the data at their fingertips when it is convenient for them." When business matters are at stake, smart companies such as the following find ways to make sure they can get at their data anytime, anywhere:

Lyndale Foods Group: Delivering the real-time data warehouse. Since deploying DataMirror's Transformation Server as part of a data warehouse initiative, U.K.-based Lyndale Foods Group has standardized reporting across business units and boosted hardware performance without upgrading or buying more storage. Sales analysis is delivered 400 percent faster and with more confidence because it's based on accurate, up-to-date data.

BG Group: Building an integrated enterprise portal. The U.K.'s BG Group trades in the gas market and wanted to replace its slow, manual processes with an easy-to-use system that would

link 10 applications for gas operations, prompt traders and allow them to access the latest figures, all from a single desktop.

BG Group built an integrated enterprise portal that aggregates all of this data—refreshed in real time—onto a single dashboard. Attachmate's Smart Connectors pulls data from each of the applications and feeds the information into an Oracle-based repository. The Java-based application defines standard XML interfaces and methods for integrating with multiple environments, including IBM mainframe, Oracle applications and Internet bulletin boards. The payoff: BG Group gas traders' improved situational awareness has enabled them to recoup the cost of the new system within six months.

Landstar System Inc.: Accelerating data movement to near-real time. Landstar System, a provider of transportation capacity, needed a scalable solution that would integrate data from multiple systems in real time. After implementing DataMirror's Transformation Server, Landstar reduced data movement time from 30 minutes to just over five seconds. The business payoff: Landstar's partners can quickly access the most current data, improving their ability to serve their customers.

often a bear to use, while training staff to run them also eats up time and money.

The key is to expand access to mainframe environments, which results in more efficient, less costly operations because information can be more quickly and easily shared, response to changing business conditions are more timely and tasks once handled by staff can be self-serviced off to users and customers.

The goal, of course, is to be able to reuse the business logic and data locked away in mainframe environments. This can be done if mainframe data, process logic and functional code are abstracted in

a standard, commonly accepted way so that they can be widely accessed, put into reusable formats and then integrated with newer web-based applications where they can be repurposed.

For example, with 200-plus requests a day for mainframe data, each one handled manually, IT managers at AgStar Financial Services knew something had to change. They chose Attachmate's Smart Connectors, which integrate legacy host information and business logic with new and custom e-business applications. AgStar uses the Smart Connectors' .NET web services to integrate custom applications and mainframe transactions.

The 200 million lines of Cobol code still in use today would cost in the neighborhood of \$7 billion to replace.

Ensemble Makes Rapid Integration a Reality

COMPANY PROFILE

Executives today are making major demands of their IT investment. They want to increase efficiency by providing enterprise-wide access to vital information and by extending access to customers and suppliers. They want to cut costs by leveraging investment in current applications. They want to compete more effectively and react more quickly to changing business requirements. And they want to achieve it all very quickly.

These are the business drivers that have made integration the #1 priority in most organizations today. These are the demands that can be met with Ensemble's universal integration platform from InterSystems.

Ensemble incorporates the capabilities of an integration server, application server, high-performance object database and a seamlessly integrated development and management environment in a single, architecturally consistent product. The result? Rapid, easy, efficient integration.

INTEGRATION OF POWER AND EASE

Ensemble's unique fusion of these previously independent technologies delivers the power to handle any scope of integration project with the ease to quickly integrate and rapidly develop.

Industry analysts and customers recognize the potential rewards of this comprehensive integration approach.

"InterSystems' Ensemble product presents a unique mixture of technology not commonly found in today's integration software that unifies the data-, process- and application-centric integra-

tion worlds. It is here that vast gains are anticipated by their customers," says Sandra Rogers, a senior analyst with International Data Corporation.

"Ensemble uniquely offers the all-in-one solution we needed to integrate information and applications, create reports across our 59 systems and leverage new technologies," says Ben Harris, deputy secretary operations and information technology for the Florida Department of Children and Families and 2004 recipient of a Computerworld Premier IT 100 Leaders Award.

A PROVEN TRACK RECORD

InterSystems, with its CACHÉ database, has built its reputation over 26 years by delivering high-performance, extremely scalable, enterprise-level data management software that sets the standard for developing high-performance and highly scalable applications.

Committed to delivering the same top-tier results with Ensemble, InterSystems recently introduced its rapid universal integration platform after a year of successful early adopter projects around the globe. The savings of time and cost realized in those projects were dramatic.

To learn more about how any enterprise can rapidly integrate applications, visit www.InterSystems.com/Ensemble



Some of the results:

- Electronic fund transfers that used to take 30 minutes now get done in about two, and with greater accuracy (always nice when money's involved).
- Some 25 steps were consolidated into a single task that allows frontline staff to easily process loan conversions, so the data involved no longer need to be sent to other departments.
- Annual savings of time and effort add up to \$328,000. Scottish Power confronted the unenviable chal-

lenge of integrating MVS, AIX and Solaris operating systems with Oracle, Sybase and DB2 databases without sacrificing data integrity or consistency. The firm opted for DataMirror's Constellar Hub enterprise application integration tool. The result? When Ernst & Young consultants conducted an audit of the project, they concluded that Constellar Hub had achieved a return on investment of 237 percent, with a payback period on the entire cost of the project of just a year.

INTRODUCING **ENSEMBLE**



THE FASTEST WAY TO MAKE YOUR APPLICATIONS **PERFORM TOGETHER**

Imagine your applications – both legacy and new – performing together as an ensemble.

That vision can become a reality surprisingly quickly with Ensemble, the comprehensive integration platform with all the functionality you need to rapidly complete any type of integration project on deadline and on budget. Even complex projects you may have struggled with in the past.

With its unique fusion of powerful technologies for application integration, development, deployment, and management, Ensemble enables extremely fast integration and rapid development of “composite applications” – new business solutions that integrate data, orchestrate business

processes, and enhance the value of legacy applications. You’ll see real-world evidence of this in the customer testimonial section of our web site.*

Ensemble is exciting new software from InterSystems. Over the past twenty-five years our high performance products have been deployed in more than 100,000 mission-critical systems around the world.

We’re so confident that Ensemble is dramatically faster than any other integration technology, we’ll be happy to begin our partnership with you by conducting a pilot project. To pursue this, contact us at:

www.InterSystems.com/Ensemble/Pilot



*Read how companies like yours have integrated applications faster with Ensemble: www.InterSystems.com/Ensemble/Customers
If you are a System Integrator in need of a *rapid* integration platform, come to www.InterSystems.com/Ensemble/Partners

The Payback for Comprehensive Connectivity to Legacy Data and Business Logic

BY PROVIDING A WIDE RANGE of standard interfaces to legacy data sources and applications, Attachmate myEXTRA! Smart Connectors enable any client to access any legacy resource, ensuring that the solutions you develop today will work tomorrow.

A study by IDC of the impact of implementing Attachmate's myEXTRA! products, including Smart Connectors, shows that companies were able to

- Lower IT staffing costs by an average of more than \$230,000 per year
- Shave more than \$900,000 a year from outsourcing, hardware and training expenses
- Generate an average of nearly \$1.9 million in savings from higher user productivity
- Boost new revenue by an annual average of almost \$2.3 million (including capture of previously lost revenue)

Topline Value: How Integration Makes Money

AS THE FOLLOWING COMPANIES can attest, integration does more than make systems work better. It can also make money.

Scotts Co.—Automating data cleansing. When fertilizer maker Scotts Co. began installing an enterprise resource planning (ERP) system, it discovered that plenty of its data was just plain wrong. After working hard to cleanse its data, Scotts decided to press the advantage and improve its forecasting and replenishment planning by incorporating point-of-sale data from its customers.

Ascential DataStage™ and Ascential QualityStage™ automatically transform the POS data according to Scotts' rules, funnel it into the ERP system and send out alerts when the data doesn't add up. Another result: Scotts' customers fixed their own POS data, improving information up and down an entire supply chain.

Novo Nordisk—Reducing costs by automating data integration. Pharmaceutical firm Novo

CREATING THE ZERO-LATENCY ENTERPRISE WITH BUSINESS INTEGRATION

HOW CLOSE ARE YOU TO ZERO-LATENCY? DataMirror CEO Nigel Stokes suggests answering these questions:

Q: How many different databases scattered throughout your organization contain partial information about a single customer? How easy is it to consolidate this data into a single version of the truth?

Q: How long does it take to compile meaningful sales figures or customer data for analysis? How confident are you that business intelligence is delivered fast enough to all the analysts and decision makers who need it? Is your analysis always based on the most consistent, accurate and up-to-date information?

Q: What level of drill-down detail are you able to achieve on the data? Can you obtain data on particular products or regions and granular levels of detail, such as seasonal or quarterly sales variations or sell-through figures in time slots as small as half an hour?

Q: How informed are your customer service representatives? Do they have access to a view of all historical interactions between your company and the customer on the phone? Are they equipped to respond rapidly to customer needs and resolve issues in real time?

Q: Do queries sometimes affect the performance of the production systems that drive your business?

Q: In the last year, how many times have your employees been affected by planned system downtime (software or hardware upgrades and other scheduled maintenance)?

Q: How many times in the last year have your web site or email systems been affected by system downtime, whether planned or unplanned?

LiveBusiness™ Helps Companies Compete in the "Now"
Economy, Executive Overview by Nigel Stokes,
CEO, DataMirror

Universal Connectivity Through Common Hub Increases Efficiency, Reduces Costs and Improves Safety

RxHub LLC, based in St. Paul, Minnesota, is an innovative technology company connecting the health care industry via shared prescription and benefit information. Recognizing that universal connectivity through a common hub would increase efficiency, reduce costs and improve patient safety, RxHub's vision was to create a nationwide electronic information exchange to share prescription and pharmacy information.

And that's exactly what RxHub achieved using Initiate Systems' solution. Initiate enables customer-focused business strategies by providing trusted customer data on demand. Initiate's solution improves the integrity of the data in each source, virtually integrates data across disparate sources and makes complete, accurate, up-to-the-moment data available to people and systems across an enterprise—and even across organizational lines.

ON-DEMAND TECHNOLOGY

RxHub leverages the Initiate Identity Hub™ software to foster significant new levels of affordability and patient safety for approximately 250 million individuals. RxHub links doctors, pharmacists and leading prescription benefit managers via the Internet. At peak times, Initiate's on-demand technology handles 300 secure transactions per second.

"Initiate Identity Hub software is the cor-

Initiate™

nerstone of the transaction switching capabilities we've created at RxHub. The ability to quickly and accurately match patients is the basis for the rest of the transactions we support, including formulary access, medication history, and generation of new prescriptions and renewals," says J.P. Little, RxHub's CIO.

What's more, he adds, RxHub can now update the Master Person Index (MPI), the medical community's equivalent of customer data on the fly, *with no downtime*, for millions of records daily—"critical for supporting the service levels that participants in the RxHub network expect."

QUANTIFIABLE MEASURES OF SUCCESS

At startup, Initiate loaded and cross-referenced nearly 100 million records in approximately two hours. Now, with 250 million lives at stake, Initiate typically finds matches in 250 milliseconds, or a quarter of a second per record.

This enables RxHub to provide secure access to prescription benefit information in less than four seconds from the initial request until a physician or certified staff member receives the complete information. During

open enrollment periods, RxHub processes as many as 3 million records per prescription benefit manager in about an hour.

For more information visit www.initiatesystems.com



Nordisk has realized 60 percent cost savings by using the Ascential Enterprise Integration Suite™ to easily integrate critical non-SAP data. And development time has been reduced by 66 percent because Ascential DataStage™—a core component of the Ascential Enterprise Integration Suite—eliminates the need for customized tools.

Henkel Consumer Adhesives—Doing more with the same IT staff. By providing Henkel Consumer Adhesives with a complete view of its business across several otherwise incompatible data environments, the Ascential Enterprise Integration Suite enables the firm to save substantially in annual dis-

tribution costs. Ascential DataStage enhanced sales information has also led to the capture of even more revenue per year using more highly targeted marketing campaigns and to an ability to confidently decide which product lines to continue or discontinue distributing.

Henkel Consumer Adhesives estimates that the Ascential data integration solution is 10 times more efficient than previous methods. The firm's data warehouse designer has said that Ascential's solution enabled the company to double in size and handle a significant increase in data management without adding IT staff. **SD**

A Brave New World

WEB SERVICES, SOA AND EVENT-DRIVEN ARCHITECTURE

The complex, even chaotic state of many corporate information technology environments is approaching crisis, exacerbated by unrelenting competitive pressure to do more, faster, with fewer resources.

Small wonder that new ideas about software architectures have begun to take hold in a big way. The old way to develop applications—‘build it and the integration will come’—clearly needs to give way to a world of service-oriented, built-to-be-integrated applications that expose key functionality via commonly defined interfaces and can be implemented as service interfaces in which one application invokes another as a service.

A new type of middleware based on XML and a few other standard protocols, web services piggyback on Internet protocols and infrastructure to overcome crucial limitations of traditional middleware, including:

- Inability to work via the Internet
- Lack of support for heterogeneity

- Resource-intensiveness
- Difficulty of use
- Fragility

For example, after replacing 100,000 applications with 6,000 web services, the U.S. Navy has reported a number of significant benefits:

- By making a single operation-planning application into a web service, \$8 million per year is being saved because of lower management costs.
- New applications now take months rather than years to develop.
- Strategic processes such as mission planning have been improved thanks to web services that aggregate and centralize weather reports.

Web services utilize a new software design idea called service-oriented architecture (SOA), which undoes application integration to enable business integration—and deliver it using the Internet.

Its benefits include:

- **Loose coupling.** Unlike tightly coupled traditional applications, loosely coupled web service applications are designed with few connections

Q & A: JOHN HUMMEL, SUTTER HEALTH, ON INTEGRATION CHALLENGES

WITH A CHAIN OF 27 HOSPITALS and 18 clinics producing annual revenues of \$5.5 billion, Sutter Health is one of the nation's leading not-for-profit networks of hospitals, doctors, nurses and other healthcare services. Sutter Health CIO John Hummel, who has overseen the development of a portal strategy that relies on Initiate Systems' products, talks here about the issues and opportunities of inte-

grating in an unwieldy industry.

Q: How do you hook up 5,000 doctors, 27 hospitals, 18 clinics and 20 other assorted healthcare providers? How do you deal with the auxiliary issues, like the political (who owns the data), HIPAA (who can see the data) and medical licensure (who can use the data)?

A: If I can get my MDs to use Microsoft's .NET—95 per-

cent of them are on PCs using Microsoft products—I can leverage all our systems in virtual databases and streamline data acquisition through a combination of service-oriented architecture (SOA) and event-driven architecture (EDA).

We could hook up *everyone* in the healthcare family through a zero-latency distributed system running

and dependencies among their elements. So any given web service can work independently of the other services that comprise an application. And applications are easier to modify and update because only a few elements—that is, services—require attention.

- **Easy to integrate and access.** Since they're written to publicly available standards and exploit universally deployed Internet protocols, web services are essentially interchangeable, potentially enabling integration wherever applications are designed or adapted to use them. And because web services standards establish the format, developers can spend their time creating better business logic rather than worrying about web services infrastructure.
- **Webifies service-oriented architecture—and the legacy.** Business processes that make up a service-oriented application have been dis-integrated into independent components (services) that are easily distributed. These services interoperate across machines and business processes—including legacy environments—to complete the solution they provide.

Thus, chunks of data and processes from spreadsheets, word processing documents, e-mail, instant messaging, calendars, ERP and CRM systems, production systems and so on can be cohesively but flexibly interlinked to streamline processes and activities across the previously impassable boundaries of technology, corporate culture and habit.

Although the promise is huge, service-oriented architecture does have some limitations:

- Underdeveloped standards mean that developers are stuck with lowest-common-denominator standard middleware, proprietary schemes or clunky gateways.

- Service reusability isn't always straightforward, especially between disparate development teams and plenty of application-specific services cannot be reused.
- Semantic differences between applications don't get solved by SOAs.



TIGHTLY BOUND VERSUS LOOSELY COUPLED INTERFACES

Tightly bound RPC interfaces:

- Map application functions to web service interfaces via WSDL
- Invoke the application using SOAP calls

Loosely coupled event-driven interfaces:

- Use messaging to communicate among several peer applications—each application responds to incoming asynchronous messages that represent business data and/or business events.
- Result in more independent applications—each one parses incoming messages and reacts to their contents, so the only contact between applications is a shared message format.
- Isolate business logic from overall interapplication event flow, making it easy to change.

What an Enterprise Service Bus Can Do

Traditional, tightly bound, distributed application environments are so complex that they're tough to monitor and troubleshoot. They're also populated with many kinds of middleware and integration mechanisms—remote procedure calls, message-oriented

on a virtual private network. This could give all caregivers the tools they need to treat the patient with *all* the needed information.

Q: How close are you to making this real?

A: I think we're in the process of really setting these directions and strategies. In the next few weeks, we'll be installing our first ATM/MPLS* wide area net-

works. We're also getting our first pilot projects up with a few selected vendors, and are figuring out how to best introduce and utilize the .NET system to achieve our doctor and patient portals.

So we're now strategically linking our vendors, thanks to their ability to run on .NET. This allows us to use .NET and Biztalk, along with Microsoft's Share and Info

Point products (for web and portal applications), to build enterprise integration.

The power of this to our industry is enormous. Regardless of the application vendor our physicians or nurses may be using, the data connectivity will provide both increased patient safety as well as cost savings.

* Asynchronous transfer mode/multi-protocol label switching

The U.S. Navy has replaced 100,000 applications with 6,000 web services, saving millions.

middleware, object request brokers and web services.

Using XML, the standard at the heart of web services, helps. It's universally understood, hides implementation details, employs a common communications protocol and interface definition, makes files self-describing and furnishes fixed formats.

But there are things XML doesn't do: it doesn't escape the tight binding of the client/server model; integration logic remains inflexible because it's embedded in the applications; and the integration itself is still point-to-point.

As a result, some organizations are turning to enterprise service buses (ESBs), integration environments that implement a loosely coupled service-oriented architecture. ESBs deal with applications as event-driven services and support orchestration, messaging, routing, legacy applications, application servers and middleware.

"Web services have proven to be a viable option for lowering integration costs, as has the application platform approach provided by such vendors as BEA, IBM, Oracle and Microsoft," says Nucleus Research analyst Kathy Quirk. "With the mix of products now available, organizations have greater possibilities for selecting products that provide the best ROI for their integration needs."

Some products, like InterSystems Corp.'s Ensemble rapid integration platform, bridge event-driven and service-oriented architectures, since they support the event-driven solutions needed in long-running business processes as well as service-oriented request-reply solutions.

Ensemble unifies architecture, development, management and storage across four tiers of enterprise business management: the data management server, the integration server, the application server and the portal server. It can be used to:

- Build adapters
- Transform data
- Handle rule-based routing
- Graphically model business processes
- Develop composite applications
- Develop dashboard-based business activity monitoring

The result? "A single comprehensive platform for rapidly building and deploying new business fusion solutions," says Trevor Matz, InterSystems managing

director for application integration. This platform, he notes, leverages the functionality of existing applications, orchestrates previously autonomous business and operational processes, and integrates information from across the enterprise.

The ROI of Web Services

Among the key benefits you can expect from web services:

Improve IT productivity

Development teams can do more in less time, thanks to graphical tools, a reduced need to custom code and architectures that promote reuse. "To keep costs down, squeeze more efficiency from existing systems and stay on par with competitors, it makes good business sense to implement real-time technology that supports a wide range of systems, thereby allowing existing technology assets to be leveraged," says Nigel Stokes, CEO and president of DataMirror Corp.

Improve business productivity

American Fidelity Assurance Co. uses Software AG products to run a data-integrating, self-service portal used by thousands of customers, brokers and account managers. "Why not push the work to a customer who is more than happy to do it for you?" suggests Jim Lupton, vice president of information systems at the company.

Reduce total cost of ownership

Simpler infrastructure is cheaper infrastructure, thanks to the use of standards rather than customized integration links, fewer license agreements to be maintained and so on. "Flexible multiplatform solutions," says Stokes, "help breathe new life into legacy and operational systems and reduce the total cost of ownership."

Lower training costs

"Easier-to-use tools and platform extensions lower the learning curve because developers can work within a familiar environment and extend their skills to build integration applications," says Nucleus Research analyst Kathy Quirk.

And, of course, proper planning has a huge impact

New Data Warehouse Slims Jenny Craig Expenses By \$1 million

CASE STUDY

Using software from Ascential Software Corporation, weight management advisor Jenny Craig, Inc. built a new data warehouse that synthesizes client and transaction information from approximately 650 Jenny Craig Centres around the world, giving the company a 360-degree view of each of its clients. Armed with this comprehensive view, Jenny Craig has brought its outsourced direct marketing programs in house—saving the company an estimated \$1 million in outsourcing and IT development costs in just one year.

According to Jenny Craig, the company began the project to address three specific problems: a lack of information about its customer base; the high cost of outsourced marketing campaigns; and a lack of real-time access to its own marketing campaign results, which prevented the company from doing the kinds of analytics and segmentation that it needed for effective campaigns.

The company's new data warehouse allows all employees to communicate—using consistent information—with Jenny Craig customers and Centres. By taking charge of its customer data, Jenny Craig was able to shed the vendor to whom it was paying more than \$750,000 per month, along with all the redundant data and multiple disparate databases.

INTEGRATED SOLUTION SPANS FULL DATA LIFE CYCLE The Ascential Enterprise Integration Suite is the only integrated solution that spans the full data life cycle and the only enterprise data integration vendor that approaches data profiling, quality and transformation as closely connected, interdependent operations.

Installing the Ascential Enterprise Integration Suite enabled Jenny Craig to lay the foundation needed to extract data from multiple data sources, clean the data and upload the cleansed, non-duplicated data into a central location. The project cost \$500,000 and will take only six months to pay for itself. The company will also create its own marketing campaigns, conduct its own analysis and maintain its own database, contributing to the \$1 million in savings.

Because of the Suite's efficiency, the weight management firm reassigned one-third of its IS staff and flattened its hierarchy, giving everyone in the department a chance to spread their wings, to take some responsibility for important projects and improve their day-to-day work experiences.

For more information on how Ascential Software Corporation can integrate your company, visit www.ascential.com

Ascential
Software

on ROI. "Only organizations that have a clear business need and a definite roadmap for exploiting integration software will achieve efficiencies and cost savings," Quirk notes.

Integration Best Practices to Remember

"WHILE THE IMPORTANCE OF INTEGRATION to creating an 'on demand' business presence cannot be overstated, it will not be easy to achieve," says Steve Garone, chief analyst and managing partner at The AlignIT Group. Some advice from the trenches:

Align IT with the business. Begin strategically by

aligning your deployment of web services with the needs of your business. You might want to make this part of a larger effort to map your IT infrastructure and capabilities to your organization's goals and needs.

Design a service-oriented architecture for your organization. Don't deploy web services without first developing a service-oriented architecture that's been aligned with business requirements. (One go-more-slowly possibility: adopt a transition architecture that introduces the concept of service orientation but not the technologies.)

Don't give up on the legacy—but know when to fold. It's common sense to look for ways to reuse legacy logic and systems before scrapping them. Services added on to legacy environments cost less, especially when using development tools that support the creation of web services.

"Use the business and security rules built into the systems as they exist today," advises Jim Lupton of American Fidelity Assurance Co. "Don't duplicate rules in the new environment."

But the functional capabilities of legacy systems are limited. These limits define the point beyond which integrating them isn't worth it.

Pick your targets carefully.

Incorporate web services only where you believe they will add value, such as automating the manual processes hidden in distributed activities like customer support or field sales. Get line-of-business managers to help you both identify where web services can make a difference and pick pilot projects. Likely best bets: core applications running in stable legacy environments, applications that are costly to integrate and manage, well-defined trading partner applications, and applications that require special skills to develop or use or need special hardware or adapters to interoperate.

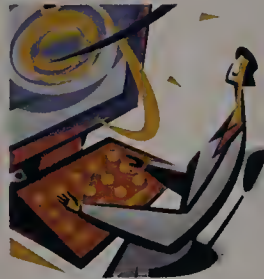
Do your homework. Make sure you have a thorough knowledge of the business model for which the service is being designed as well as the technologies the service uses. Do multiple pilots and anticipate that some will fail. One starting point: wrap SOAP and WSDL around existing interfaces to attain one-way, point-to-point integration that apes traditional data-centric APIs.

Don't forget ROI. Nothing provides proof-of-concept like solid evidence of positive return on investment. That means measuring performance before as well as after web services are implemented.

Stick to the standards. "I'm still a big fan of XML and the promised standards," says Lupton. "As more and more companies implement them, the need to care about whose data is the most critical and who will have to convert should be eliminated."

Plan to implement and migrate in increments.

Doing web services in increments gives you the ability keep things simple and on budget—and to generate the incremental ROI that will keep support for web services development high.



Because web services are loosely coupled, they can be phased in incrementally at different levels, and your staff can learn about them as they go. Don't let your web services project momentum get ahead of your organization's knowledge curve.

Some organizations are implementing web services in successively more mature stages. They begin with

read-only, data-centric services that imitate existing APIs, move on to two-way transactional services that can leverage emerging standards and products and finally field document-oriented, asynchronous services addressing sophisticated business processes.

Choose your weapons. You'll need to decide on a core services platform. Many use as a foundation the work they've done on Windows and J2EE servers. Or you can turn to enterprise software platforms, which are being adapted to deliver web services, or newer service- and/or event-oriented integration platforms.

Design for the future. This means you'll want your web services efforts to be fully scalable. Among the issues to keep in mind are:

- **IT infrastructure integration.** Use web services standards across your entire enterprise; use naming conventions to label your infrastructure. Build shared infrastructure services to ensure security, reliability and manageability (candidates include: data transformation and logging applications).
- **Web services that are integration-agnostic.** The more kinds of integration you can support, the better. After all, your organization needs:
 - Interface integration, to deliver a single, interactive user experience
 - Data integration, to federate data and transport enterprise information
 - Application integration, to bring true interoperability to infrastructure architecture
 - Process integration, to orchestrate applications and services
- **Process-centric web services.** Before selection of data types or APIs, each web service should be designed as a discrete task with business process inputs and outputs.

"With the mix of products now available, organizations have greater possibilities for selecting products that provide the best ROI for their integration needs."

—Kathy Quirk, analyst, Nucleus Research

Harbor Federal Savings Bank Enhances Secure, Scalable Banking Services

CASE STUDY

With \$2.4 billion in assets and 34 full service banking branches, Harbor Federal Savings Bank (Nasdaq: HARB) is one of the largest independent financial institutions in Florida. It also has the distinction of being rated the *number one safest* bank in the state.

As a longtime Attachmate customer utilizing a Unisys ClearPath NX host, Harbor Federal knows the importance of working with a vendor with expertise in both host access and Unisys legacy systems.

INTERNET-SAVVY CUSTOMERS REQUIRE ONLINE ACCESS

Early on, the bank recognized the benefits of using the Internet to provide customer service, says Annetta Smith, IT director for Harbor Federal and asked Attachmate consultants to codevelop an application to get the bank "where we needed to be."

Using Attachmate SDK technology, Harbor Federal's Internet banking services rolled out in 1999, offering customers retail banking via the Internet (account information and transfer of funds). Online banking proved so popular with customers that the bank has continued to add more features, such as external funds transfers.

Recently, it has rolled out a check-viewing feature. Attachmate worked with Image Soft to reproduce check images and create the onscreen presentation. Nearly 100 customers a week are signing up for the option.

Currently, Harbor Federal has about 24,000 commercial and retail customers using online services, with 10,000 transfers a month. Thirty percent of the bank's accounts are online and about \$2 million per month is moved via the web. With increasing levels of activity, it continually enhances online services, which it treats as its highest-volume-transaction "branch."

SMART CONNECTORS TAKE ONLINE SERVICES TO THE NEXT LEVEL

The first bank in its area to offer secure bank-to-

bank transfers, Harbor Federal is adding more features and functionality by migrating to Attachmate myEXTRA! Smart Connector technology.

Smart Connectors allows the bank to automate processes from the front-end user interface by making the link to the back-end host functions necessary to complete the transactions. Processes previously done manually, like stop payments, will be automated. Customers will be able to transfer funds to other banks with preverified forms.

"Information will be auto-populated, so there is no need to type in data. Customers simply pick and choose options," adds Smith. New commercial functionality will include check verification, wire transfer and ACH origination via the Web.

"This is just amazing," says Smith. "Smart Connectors allows us to go in different areas, improve efficiency and gives us more management capabilities, plus it's a lot easier. And we don't have to disturb our current online system while we implement the new technology. Customers will still enjoy the simplicity of the interface, without disruption of service."

ATTACHMATE SOLUTION SIMPLIFIED IT TASKS

Harbor Federal wanted easy maintenance and the flexibility of integrating data from multiple sources, accessing various types of database engines.

"We looked at other vendors with good database applications, but where those vendors were required to talk to the mainframe, there was a breakdown. We selected Attachmate because of its expertise in host access and especially its Unisys knowledge," says Smith. "I met with Attachmate and said 'I think we can make this work,' and we did."

For more information on how Attachmate can help you, visit www.attachmate.com

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- **Migration path awareness.** Web services should be designed to accommodate anticipated migration paths.
- **Development using a standard component framework.** This promotes reuse of modules and systems, enabling you to migrate legacy assets to web services as need and opportunity demands.
- **Adaptability to new IT models.** Notably, CIOs should consider on-demand computing, portal-based clients and grid computing.
- **Expect to make changes you don't expect.** Surviving and thriving depends on one's ability to adapt to evolving circumstances. Pragmatism rules.

What is Service-Oriented Architecture?

SOA is a software design principle that promises to:

- Incrementally develop and deploy business software
- Reuse business components in multiple channels and environments
- Assemble new business processes at low cost
- Bring clarity to application topology

How it works: A description language defines all functions as services that have invocable, platform-independent interfaces that perform business processes when called. All services:

- Are based on a platform-independent interface contract, so clients from anywhere, in any operating environment, using any language, can use the service
- Can be dynamically located and invoked
- Are self-contained, so each service maintains its own state

Web services are one way to implement an SOA, providing a kind of service-oriented architecture in which network-accessible software functions (application services) are made accessible using platform-independent web standards. These standards define protocols for communications and interfacing that can be provided

via a server or invoked from any application client. Key web services protocols include XML (eXtensible Markup Language), SOAP (Simple Object Access Protocol), WSDL (Web Services Description Language) and UDDI (Universal Description, Discovery and Integration), which work as follows:

XML tags the data.

XML enforces document rules using a standard alphabet, punctuation and words to encode messages and describe interfaces, so developers can create customized tags that define, transmit, validate and interpret data between applications and organizations.

SOAP transfers the data.

SOAP describes the content of a message and how to process it—called the SOAP envelope—and provides a binding framework for exchanging SOAP envelopes, including an ability to represent application-defined data types and remote procedure calls and responses.

WSDL describes available services.

WSDL is an XML format that defines network services by abstractly describing messages and operations and then binding them to specific network protocols and message formats to define an endpoint. Such abstraction makes WSDL a very flexible way to describe complex web services applications.

UDDI lists available services.

UDDI is a set of protocols and a public directory of a network's registered web services that can be accessed in real time, enabling the hosting of multiple versions of a service, management of services access and creating aliases to services.

Web services can be used—and importantly, reused—in any type of network environment without the user needing to know implementation details, so web services support a wide range of data interactions, including business-to-business and peer-to-peer. In effect, an enterprise's IT functionality is made available on the (public) network as a collection of discoverable services. **SD**

“While the importance of integration to creating an ‘on demand’ business presence cannot be overstated, it will not be easy to achieve.”

—Steve Garone, chief analyst and managing partner at the AlignIT Group

Tools of the Integration Trade

BEGIN WITH THE DATA

In 2002, about five exabytes (one exabyte = 1018 bytes) of information were generated in print, film and magnetic and optical storage, according to a study by the University of California-Berkeley. That's roughly 800 megabytes of recorded information per year for every human being on the planet.

Such massive amounts of data are intensifying the strain on corporate information systems already

struggling with serious data quality problems—problems that cost U.S. businesses about \$600 million in 2002, according to estimates from The Data Warehousing Institute. Data quality issues are triggering failure in more than 50 percent of CRM initiatives, say analysts at Gartner.

Arguably, then, IT integration starts with the data. Businesses that don't integrate their data can't expect to do more than behave as a collection of noncollab-

THE FOUR-STEP APPROACH TO ATTAINING GREAT DATA

Proper integration means making data quality a top priority. CIOs can improve data quality by taking these key steps:

1 ENSURE DATA CONSISTENCY

- **Profile all of your source systems** (using reconnaissance software) in terms of data content, data dependencies and data quality.
- **Establish enterprise-wide data definitions and metadata** and possibly rules and processes for data capture.
- **Centrally store master data dictionary**, enterprise metadata and related information about processes so it's universally available.
- **Standardize the data** your enterprise depends on to do business (for example, product/service information, customer names).
- **Match records across data sources** to resolve any conflicts or redundancies between sources (and the business processes they support).
- **Apply uniform rules, procedures and processes** to new real-time data as well as batch data cleansing.

- **Automate data integration chores** that are manually tedious and resource-intensive, such as data extraction, repurposing, transformation and loading so these processes are reliably repeatable and can be adapted easily to changing business conditions.
- **Deploy information lifecycle management tools** to help maintain data value and integrity over time.

2 ADJUST YOUR IT INFRASTRUCTURE TO ACHIEVE DATA CONSISTENCY

- **Opt for interoperability**, which is achievable these days in two ways:
 - 1) *Deploying suites* that include data quality, profiling, integration, metadata management and other key data functions in a single platform
 - 2) *Adopting open standards* such as XML and web services, J2EE and .NET, to integrate legacy data and systems including those in other enterprises.
- **Employ a scalable architecture and platform environment**, so you can adapt to evolving business conditions, manage large amounts of data

and respond to growing data volumes and integration requirements.

3 KNOW THY DATA

- **Understand how your business creates its information**, including how data emerges from the ways your business touches its customers and prospects.
- **Apply a single enterprise wide set of business rules** to the integration of all customer data, regardless of its source or use.

4 IMPROVE THY DATA

By developing new ways to use it, like combining real-time customer data with customer transaction histories, demographic data and financials, companies will find that their data yields better and more useful insights, all in support of the legendary 360-degree view of the business and its customers.

"To create trusted information," says Mark Battaglia, senior vice president of marketing at Initiate Systems, "CIOs must become as vigilant about data integrity and data integration as they are about data storage and data movement."

orative neighboring units. "Data is the fuel of the on-demand enterprise," says Mark Battaglia, senior vice president of marketing at Initiate Systems. "Without accurate, up-to-the-moment data, on-demand just enables you to make mistakes faster."

And as more data get created with each passing



WHAT'S IN A BYTE?

Gigabyte = 1,000,000,000 bytes (10^9 bytes)

Terabyte = 1,000,000,000,000 bytes (10^{12} bytes)

1 Terabyte = 50,000 trees made into paper and printed

Petabyte = 1,000,000,000,000,000 bytes (10^{15} bytes)

200 Petabytes = production of digital magnetic tape in 1995

Exabyte = 1,000,000,000,000,000,000 bytes (10^{18} bytes)

2 Exabytes = total volume of information generated worldwide annually

5 Exabytes = all words ever spoken by human beings

Zettabyte = 1,000,000,000,000,000,000,000 bytes (10^{21} bytes)

Yottabyte = 1,000,000,000,000,000,000,000,000 bytes (10^{24} bytes)

minute, it's no longer practical for organizations to use third-generation languages (3GLs) and scripts to hand-code the extract-transform-load (ETL) work that underlies their data integration initiatives.

These days, ETL—still at the heart of data integration—encompasses several core capabilities:

- Automated data profiling to uncover source data structure and content
- Assuring consistent data quality
- Strong ETL functionality that can integrate data from any source and load it to any target
- End-to-end metadata management so there's uniformity in the ways an organization defines, tracks and manages its data
- Scalability to handle integration tasks involving ballooning data volumes and shrinking time frames

"Hard returns related to data cleansing efforts often come from the reduction or elimination of the labor costs associated with hand-coding data cleansing applications and manual reconciliation of individual records," says Pete Fiore, president of Ascential

Software. "Productivity gains delivered by automating previously manual processes are substantial, especially in view of the increasing demand to profile and cleanse data in large scale across the enterprise."

For example, WesTrac Equipment, an Australian dealer for Caterpillar, needed its SQL Server-based purchasing application to interact with other business applications and numerous web applications required database-resident business information in real time. DataMirror's Transformation Server did the trick, delivering ROI faster than WesTrac expected: the three-year ROI of the measured WesTrac applications and services that rely on Transformation Server is roughly \$3 million.

Customer Data Integration

Much of business and IT integration contributes to enterprise cost savings that improve the bottom line. Adding to topline revenues, however, is another matter.

For many companies, a first step to boosting revenues is improving the quality of its customer data: when you know who your customers are and how you've interacted with them, you can identify the most profitable products, relationships and strategies.

"Obtaining an accurate, single view of the enterprise, including external relationships, can directly translate into expanded and longer relationships with less attrition," says Ascential's Fiore.

But launching an enterprise-wide data quality initiative can be complex and resource-intensive in its

own right. It requires that you deal not just with data volume, but also:

- The many and varied channels through which customer data flows
 - Customers' high mobility—direct marketers estimate that about 2 percent of a typical consumer database "goes bad" each month
 - The lack of integration among systems and applications
 - A growing collection of regulations and compliance requirements that drive how data is collected, used, stored and secured
- "Regulatory or legal requirements such as Sarbanes-Oxley or HIPAA are the impetus for a better understanding of data quality and its impact on the business," Fiore says. "The mandate for better corporate governance and financial transparency has also been a significant driver and has raised the stakes, because poor data hygiene can result in criminal and civil penalties." **SD**



The Ascential Dialogue

Essential Insights on Enterprise Data Integration



Pete Fiore is President of Ascential Software. If you have a question for Pete, please send it to: ascential.dialogue@ascential.com

Why does data integration always come up as one of the top issues on the minds of CIOs?

Well, every company needs integrated, accurate and reliable data to make the right business decisions. The importance of data in this mix is really driven by fundamental business issues that IT departments need to be in front of.

What Do You Think?

Ascential Software wants to know what's on your mind re: data integration—and give you the chance to compare your answers with those of your peers. Go to the URL below to answer this question and benchmark your response:

"Which Business Drivers are Creating The Most Demand for Integration?"

- A. Regulatory Compliance (eg. Sarbanes Oxley)
- B. Cost Reduction
- C. Business Intelligence
- D. Single/Accurate View of Enterprise Data
- E. ERP/CRM Implementations
- F. Other [fill-in]

www.ascential.com/survey/

About Data Integration: Today's Top Challenges—and Solutions

CIOs are being asked to deal with issues such as: Sarbanes Oxley compliance; Basel II in financial services; creating IT efficiencies by consolidating an organizations view of their critical data; and cost reduction through application and infrastructure consolidation. When you think about it, data is one of the most valuable corporate assets that a company has. Business leaders recognize that in a world of increased accountability, the decisions they make must be based on data they have confidence in. So you see companies demanding a robust data infrastructure that critical business decisions can be based on.

So how do you define data integration?

Data Integration is about bringing together data from all the different sources, systems, and applications that are used around an enterprise, and assembling that data into a valuable and reusable information asset to drive business initiatives.

Data integration provides an organized, repeatable and continuous process that assures that the information an enterprise relies upon is coherent, accurate, up to date—even up to the minute or instant—and that this information is readily available in the required form to all the applications that need it.

The IT executives we talk to

believe the necessary steps to integrating data include: data profiling—discovering where your data is distributed throughout the organization and how it is structured; data quality—ensuring it is accurate and reli-

data integration delivers very tangible and rapid return on investment. The case will be easier to document and sell if you can partner with a vendor who has completed similar projects.

As you build your case, make

"BUSINESS LEADERS recognize that in a world of increased ACCOUNTABILITY, the DECISIONS they make must be based on DATA they have CONFIDENCE in."

able; and data transformation—putting it in the right formats and systems when needed. All of this needs to be available within a Service Oriented Architecture, be built on a scalable platform and must include meta data management and sharing.

How should a CIO build & sell a business case for a new data integration initiative?

First, look across the various business units in your organization. Most likely, there are already a number of business initiatives underway that will benefit from a common data integration infrastructure. Once these initiatives are identified, we suggest researching comparable projects outside your enterprise to quantify the potential business and IT benefits and overall impact to your organization. The good news here is that

sure it includes all the components necessary to implement an effective data integration project, including architecture, methodology, software platform, and best practices. Before presenting the case to senior management, share it with various business stakeholders in your organization to get feedback and buy-in, address specific concerns, and fill in any unforeseen gaps.

INTEGRATION RESOURCE

For a free copy of the report, *"The Essential Guide to Accessing, Consolidating and Trusting Your Data,"* please visit www.ascential.com/guide/

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Making decisions with only half the information is ... useless.

SOA is a moot point if you don't include your legacy systems

There are a lot of vendors claiming they can solve integration issues, but very few have the know-how to actually get to the heart of your business – your legacy system. And if you can't get all the information, your plans for smooth integration and a service-oriented architecture come to a standstill.

Our time-proven technology lets you SOA-enable your host, so you can respond to new business demands economically, by maximizing the investments you've made in your legacy assets over the years. Without taking unnecessary risks.

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CIO | 05 The Year Ahead

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Coming just a week after the 2004 presidential election, **CIO | 05 The Year Ahead** sets the CIO's agenda for 2005. We'll look at the most significant forces at play in global affairs, the economy, business and technology. Then we'll analyze how those forces will impact the role of the CIO—and drive the industry—in the next 12–24 months.

Finally, we'll help you set and validate your own agenda: What are the business priorities? What are the IT requirements, and how do you get them sourced and funded? How do you ensure corporate understanding and buy-in? What *shouldn't* you waste your efforts on? We'll explore the critical work to be done and share the most successful approaches to these complex issues. In 2005, your competition will only be tougher—and more will be expected of you. **Set the new CIO agenda with your peers in Scottsdale.**

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F O L L O W - U P

IT High School Expands Program

WHEN WE FIRST reported on George Westinghouse High School (GWHHS) in 2001 (see "A School Grows in Brooklyn," www.cio.com/printlinks), Principal Jean-Claude Brizard was working to transform a school once known more for its jewelry-making classes and high suspension rates than its educational value.

Four years ago, Brooklyn's "IT High" dropped its traditional vocational classes and adopted a technology-only curriculum, including Cisco certification and C++ programming classes. The result: Urban Brooklyn's economically underprivileged kids have a better chance of going to college and getting a job in IT-related fields, and the school's name is no longer synonymous with crime.

"In the past, the students spent so much time in shop class, they weren't prepared for the allure of a technical career," says Brizard, who is now a local instructional superintendent of nine high schools—including George Westinghouse, after he turned over principal duties to John Widlund last June. "Companies today want experience and higher education," he says.

Nearby companies, such as banking giant HSBC, are offering that experience by pairing GWHHS students with company



Principal John Widlund (above, and below working with student Joseph Anderson) wants George Westinghouse High School to attune students to the allure of careers in technology.

mentors and providing internships.

Just as companies are constantly adapting to changing business climates, says Widlund, GWHHS is refining how it becomes a pioneer IT school. At first, the technology curriculum was more concentrated on the junior and senior years when students focus on one IT subject, taking courses in areas such as C++ programming. Now it's focusing on adding technology to the earlier grades when students study academic subjects, a potential challenge for teachers who have worked mostly with paper and chalkboards for years and are reluctant to use computers as educational tools.

"It's easy to get technology teachers involved in new technology, but it's more difficult to get an English teacher involved who has a phobia about these things," Brizard says.

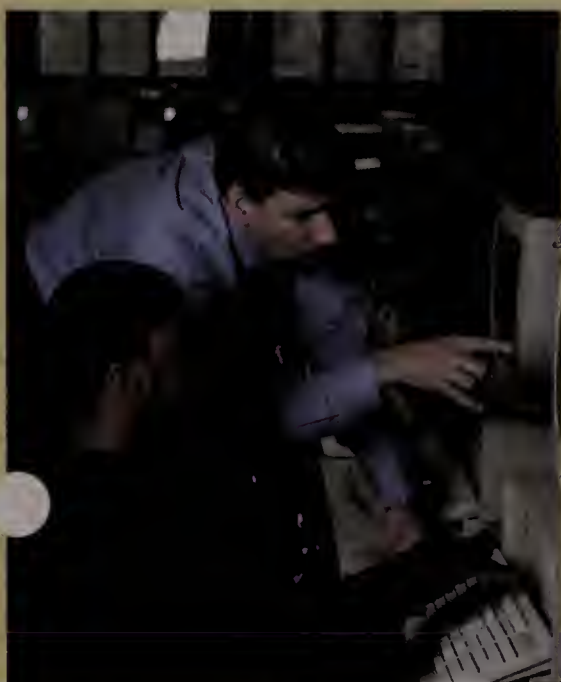
So this year, with the help of a \$450,000 grant from the U.S. Department of Education, there are two teachers in many of the ninth-grade classrooms: An academic instructor and a technical instructor who helps students when they need to search for

answers on the Web or use a PC to write an essay. Next year, students will be required to submit work electronically.

Parents are impressed. Carolette Rouse balked when her only child, Jermaine, showed interest in the school four years ago. "When he selected the school, my eyes were popping out because I had heard so many stories about George Westinghouse," she says. "I had to see it for myself."

What she saw were big changes and the school's potential. Now a parent coordinator who helps plan parent-teacher night and other activities, she has watched the school's transformation firsthand. When Jermaine had trouble with the Cisco program, the school matched him up with another student and he improved. Set to graduate this June in the second class to finish the entire IT program, Jermaine is weighing his options of going to college (such as New York Technical College in Brooklyn) or entering the workforce. He has what George Westinghouse students of a few years ago did not: choices.

—Sarah Johnson



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Off the Shelf

Edited by Carol Zarrow

Powering Down

This month's authors are convinced that decentralizing corporate power is a good thing. Now, if only the people at the top would agree.

The Future of Work:

How the New Order of Business Will Shape Your Organization, Your Management Style, and Your Life

By Thomas W. Malone
Harvard Business School Press, 2004, \$29.95

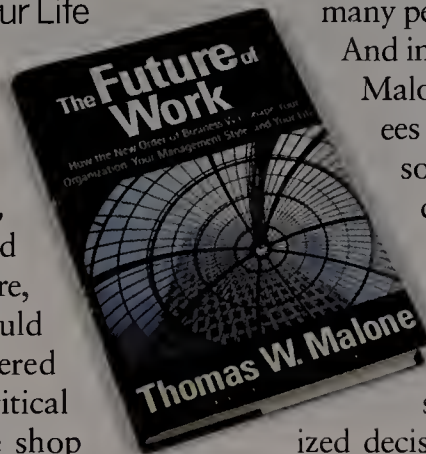
DURING THE DOTCOM BOOM, the idea was touted often (and breathlessly) that in the future, corporate hierarchies would wither and a newly empowered workforce would make critical business decisions from the shop floor and the field office. While it remains a staple of software vendor pitches and career-building workshops, these days the notion that the rank and file might rule has about the same cachet as Kozmo.com.

Yet decentralization as a management strategy isn't a passing fad, says Thomas W. Malone. In *The Future of Work* Malone argues that information technology makes the distribution of corporate power away

from the executive suite both inevitable and desirable. It's now inexpensive and easy to collect and distribute information among many people (including outsourcers).

And in case it isn't obvious by now, Malone reminds us that employees are happier when they have some control over what they do: Managers in a decentralized environment become facilitators, rather than enforcers of rules.

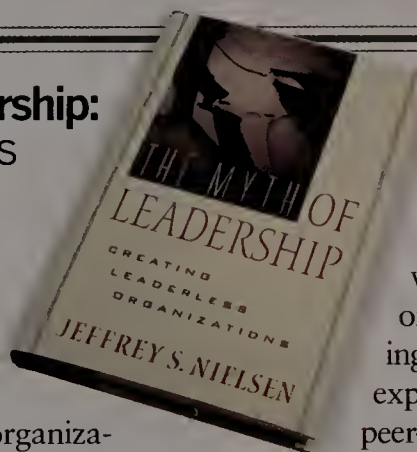
The book describes several models for decentralized decision making, with examples from companies like W.L. Gore (which makes Gore-Tex fabric) and Hewlett-Packard. To his credit, Malone acknowledges that for most organizations, central and distributed management structures will coexist well into the future, and he includes a method for weighing the costs and benefits of managing a process or activity without central control. But the most important part of the book is Chapter 10, "Cultivat-



The Myth of Leadership: Creating Leaderless Organizations

By Jeffrey S. Nielsen
Davies-Black Publishing, 2004, \$25.95

"**DESIGNING**, managing and working in human organizations should be a joyous task." So begins Jeffrey S. Nielsen's book exploring the concept of peer-based leadership. In Nielsen's view, rank-based management—where the



few executives at the top make decisions for the many underneath who do the actual work—is not the way to infuse workers' lives with joy, innovation or meaning. To truly offer a fulfilling (and ultimately profitable) work experience, organizations should be peer-based, with decision making the collective job of the employees who work closest to customers.

As Nielsen points out, many of the ideas he presents about peer-based management

have been proposed before, by the likes of Peter Drucker, for example. While he does offer guidance as to how companies can gradually introduce peer-based concepts, Nielsen offers few suggestions for overcoming the real stumbling blocks—the executives themselves. With all the prestige, power and money currently associated with being a C-level executive, it's unlikely that many will willingly discard the "chief" in their titles and replace it with the adjective "consulting," as Nielsen recommends.

—Megan Santosus

CIO Best-Seller List

Smartest Guys in the Room: The Amazing Rise and Scandalous Fall of Enron

By Bethany McLean and Peter Elkind
Portfolio, 2003

The Innovator's Solution: Creating and Sustaining Successful Growth

By Clayton M. Christensen and Michael E. Raynor
Harvard Business School Press, 2003

Guts! Companies That Blow the Doors Off Business-As-Usual

By Kevin Freiberg and Jackie Freiberg
Currency, 2003

In an Uncertain World: Tough Choices from Wall Street to Washington

By Robert Rubin and Jacob Weisberg
Random House, 2003

Good to Great: Why Some Companies Make the Leap...and Others Don't

By Jim Collins
HarperCollins, 2001

SOURCE: Data from March 2004, compiled by Powell's Books, Portland, Ore.

ing People." Read it first to find out what you'll need to do as a leader to succeed in a decentralized environment. Hint: You have to give up some power. —Elana Varon



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MAINFRAMES

A Work of IT Art Turns 40

FOUR DECADES AGO, Erich Bloch was busy developing the technology that would become IBM's first true mainframe, the System/360. Unveiled in April 1964, the System/360 represented a dramatic shift in the nature of computing—and a unique opportunity for Bloch and his colleagues to be at the center of the action.

"Technology moves along on a gradual kind of curve," Bloch says, "but every once in a while there is a major kind of discontinuity." He notes that just a few years prior to the 360, such an upheaval had occurred during the move from tube-based computing to transistors. "The effect of that [transition]—not just on computing but on technology in general—was very great," Bloch says. "There was an equal kind of expectation that the move from discrete components to microelectronics [like those in the System/360] would create a major

kind of discontinuity again. It would allow you to do things that you couldn't afford to do before."

Mission accomplished, the System/360 went on to establish IBM as the dominant player in the mainframe market—a position the company holds to this day. IBM continues to ship mainframes even in this workstation and server era, thanks in part to such unexpected partners as the Linux operating system.

As for Bloch, he went on to other achievements, including the directorship of the National Science Foundation from 1984 to 1990. He also now serves on the President's Council of Advisors on Science and Technology. And he's not looking to roll

things back to the old days of ivory tower computing. "Computers are so ingrained in our lives that people feel comfortable with them," he says. "It's no longer the exception behind the glass wall. I consider that a very good thing." —Christopher Lindquist



The IBM System/360 mainframe (pictured above in an IBM handout) was one of the most influential computer rollouts ever when it hit the market in April 1964. A programmer used a special IBM Selectric typewriter as a keyboard.

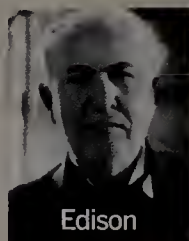
This Date in IT History

Edison Wins His First Patent

June 1, 1869

Thomas A. Edison wins his first of more than 1,000 patents on this day for an electric voting machine. With little formal schooling, the 22-year-old inventor designs the battery-powered machine for legislative bodies such as Congress. Edison's machine (for which he receives patent no. 90,646) records yes and no votes when a user flicks a switch, and quickly records and tabulates results on paper. By 1892, the invention gets its first public use in a Lockport, N.Y., town meeting.

By then, of course, Edison is on to other things: the incandescent lamp, the electric railroad, electric lighting systems, and power distribution systems and plants. Later his inventions provide the early tools on which the recorded music and film industries transmit their sounds and images to mass audiences.



Edison

I. T. MARKETING

On the Road from Helsinki



PROMOTING A TECHNOLOGY product in the United States can be hard enough if you live here. Promoting it when you live in Finland, a Nordic country where brash marketing goes against your national character, can make the process infinitely more difficult.

"In Finland it's not good or even acceptable to brag about your product," says Heikki Raisanen, CEO of Emfit, a company that produces thin, flexible impact sensors used in a variety of markets, from health care to security. "In the United States, you should or must in some cases brag to promote your product in order to get it above the noise level."

Raisanen traveled from his company's home base near the Arctic Circle along with top executives from 13 other Finnish technology companies for a tour last March of Silicon Valley. Global Software, a marketing and business development company,

organized the trip to help the Fins network with prospective partners and customers—as well as bridge that cultural gap against bragging, to hone their marketing messages to suit a U.S. audience.

Raisanen notes that Finnish salespeople are usually engineers—not professional sellers—and they tend to be very honest about a product's capabilities (and limitations).

Finnish companies also have a leg up on Americans when it comes to wireless adoption. Not surprisingly, several of the touring companies' offerings had a wireless element. Capricode, for instance, provides wireless device management. Celesta offers wireless enterprise application development. And MyOrigo's wireless phone includes user interface features such as "My Book," which allows a user to use a fingertip to scroll up and down pages on a handset screen. Dare they call that innovative? —C. L.

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The Vanishing IT Department

What's killing many IT departments is not talent shortages or offshore outsourcing. As one longtime CIO argues, it's laziness and lowered expectations.

BY JERRY GREGOIRE

THE GOOD NEWS IS, the CIO role is safe and will continue to thrive over the long term.

The bad news is that at most companies, the information technology department that many of us knew and all of us aspired to have, is finished. In spite of what you might have heard, this is not a matter of available talent. Declining undergraduate enrollment in computer science and related fields is neither the cause nor the effect, but simply a convenient and utterly dopey excuse for this slow-motion train wreck. What is killing IT are lowered expectations, simplified missions and generously elastic notions of identity. One day soon you may wake up and find that just because your title says CIO and you're running a department, it doesn't mean you're running an IT department.

Here's what I mean. At the last CIO 100 conference, one of the speakers made reference to the paradox of the Ship of Theseus, a reflection on how much change something can tolerate and still maintain its identity. You'll no doubt recall that Theseus was the guy who entered the labyrinth to slay the Minotaur. When he sailed back to Athens he received a hero's welcome, and his



ship became famous by association, sailing in parades long after he died as a tribute to his grand achievement. In between the parades, a crew would take the ship on a tour of the Mediterranean and as they sailed, the ship would need a few repairs. After many years of voyaging, every piece of the ship, every plank, and every bit of tackle and rope was replaced until not a single original piece remained. And still every year the crew sailed the ship in the annual parades as Theseus's ship.

As it happens, the entire time the ship was sailing and making its repairs, a scavenger ship of exactly the same design, but in far worse shape, was following. As the Theseus crew members made repairs they would throw the old parts overboard, which the scavenger ship's crew scooped up and used to replace their ship's even older parts. Over the years, every piece of the scavenger ship, every plank, and every bit of tackle and rope was replaced with the discarded parts of Theseus's ship. So,

ILLUSTRATION BY STEVE MUNDAY

who has Theseus's ship?

Bits and pieces of your department have already been thrown overboard. How many more before you don't have an IT department anymore?

Know-Nothing IT

For whatever reason, many companies have lost the confidence to make technology investments. So now they task the IT department with coordinating the installation of somebody else's software and negotiating contracts with outside companies to keep systems running on networks, servers and workstations that are being monitored by yet another collection of third parties. For these firms, this voluntary and catastrophic loss of internal capability is worth the comfort of knowing that they need not worry about a shortage of IT talent and that keeping up with everybody else is simply a matter of being skilled in contract negotiations. One has to wonder whether companies like these will be able to buy their way into every new idea that comes along.

In this brave new world of shedding capability for certainty, IT leadership teams with no technology background are becoming far more common. With them comes the mistaken belief that understanding the tools and their potential is somehow the same as knowing how to use them, like knowing how to work a telephone is the same as knowing how it works. Do you know how a telephone works? I don't. Do you know how a proxy server works? Of course you do. Unfortunately, many of your newly minted CIO colleagues don't.

Yes, this matters.

Consider for a moment that, given an hour or two of reading an instruction manual and a few hours looking over a dentist's shoulder, I could probably do a passable job of pulling teeth. So why doesn't that make me a dentist? Well, because I'd be helpless if anything went wrong during the extraction, and since pulling teeth is the only thing I know how to do, a pulled tooth is exactly what every patient who comes through my door is going to get. CIOs with no formal training or long-term experience in IT are not CIOs. They're just very nice people from other disciplines sent in to make sure IT doesn't do anything dangerous or exciting. The same goes for the rest of the IT leadership.

For those companies and departments that continue to believe that IT is a source of competitive advantage and differentiation—the good news is that while the number of kids graduating with degrees in computer science may be declining, the amount of new talent remains the same. Let me explain.

An amazingly large number of kids are very pragmatic about the decisions they make concerning majors. They might

have always dreamed of being a cowboy or a fireman, but when it comes time to fork over the tuition, they go for the major that gets them the hot job. Five years ago—when IT and the nested absurdities of reengineering, ERP and the new economy were hot—colleges were turning out graduates by the tens of thousands. And there were huge talent shortages then! In those days, one of (maybe) every three graduates we interviewed at Dell had a real passion for the profession. Today, only the kids with a passion for IT are left.

What's missing among companies who have given up on IT is the energy to chase this talent down. Now, as then, the suc-

What's missing among companies who have given up on IT is the energy to recruit and chase down new talent.

cess of an organization hangs on its ability to recruit and retain. While this may sound obvious, I think that the vast majority of IT managers are very, very poor recruiters.

Outsourcing Is for the Lazy

There are three immutable and unpleasant truths about information technology staffing and retention that make outsourcing the dodge of choice for the incompetent and lazy: 1. Turnover is expensive; 2. Retention rate is the most accurate indicator of leadership quality; and 3. Recruiting is the hardest job an IT manager has.

It is far easier to "order" a programmer, as one might order in a pizza so as not to have to cook, than to sell someone on joining the organization. We pay dearly for outsourcers and consultants that arrest the development of our organizations' internal capabilities and cause us to place the future well-being of our company in the hands of people who have no emotional stake or connection to our business.

So, what kind of IT organization do you aspire to have? If you yearn for adequate results on vanilla systems in pursuit of dial-tone regularity, forget about talent shortages and go find yourself a good contract lawyer. If, on the other hand, you still believe IT can make a competitive difference and that even the more mundane tasks can be a channel of competitive advantage given a little creative effort, then developing and retaining a professional organization should be your number-one goal. If it is, I thank you and wish you the very best. **CIO**

Jerry Gregoire is a former CIO at Dell and PepsiCo. Today he serves on the boards of various high-tech companies and herds cattle on his ranch outside Austin, Texas. Occasionally, he'll stop to read his e-mail at jerry_gregoire@mindspring.com.



Howard Rubin | Real Value

Practical Counsel for Capturing IT Value

The Elusive Value of Infrastructure

IT infrastructure is expensive to maintain, and its importance is not always obvious. Here's how to place a value on the data centers and other parts of your IT boiler room.

THE I.T. INFRASTRUCTURE is essentially the cosmic boiler room of your IT plant. When looked at this way, most business executives understand its importance—they consider IT infrastructure a necessary evil—but they also see it as an expensive one. In fact, during the past three years of IT cost pressure and real cost reduction, corporate executives around the world were heard to say: “I am spending \$XX millions (or perhaps billions in the case of the Fortune 100) on my IT infrastructure this year—but just what am I getting for all that money?”

Explaining just what the business is getting is one of your most important jobs as CIO. IT infrastructure can comprise many things, including the data center, printers, network cabling or servers. These things are the IT backbone of any company. And here are some quick facts that you can use to benchmark your infrastructure spending. On average, 41 percent of IT spending is associated with the infrastructure and the personnel needed to operate it. And with the average company now spending about 3.8 percent of its revenue on IT in 2004, this means that a typical company spends 1.6 percent of its revenue on IT infrastructure. This is not a small amount of money.



Read on for ways to break down infrastructure value so that you can more easily make your business case for it.

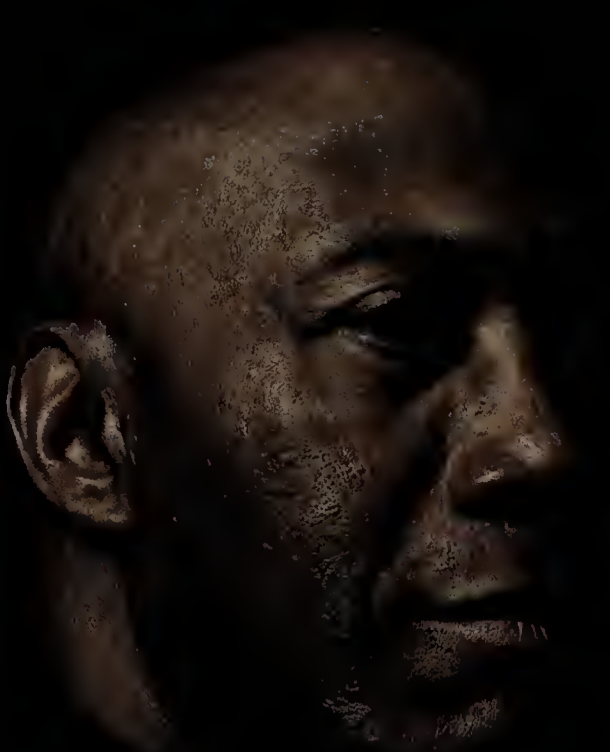
Value in the Eye of the Beholder

Some companies differentiate themselves on cost, others on service and service quality, still others on the ability to handle a wide range of conditions and rapid growth. And obviously, most businesses have a combination of differentiators. A discussion of the value of infrastructure—and even its measurement—can be done only in the context of business goals, strategies and outcomes. But there are some common threads for categorizing the kinds of value infrastructure provides.

Economic value. First, economic value is the contribution of the infrastructure to the profitability of the business. This category is derived from the underlying cost structure of the infrastructure in support of the revenue, profitability, financial

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performance, service level and other requirements of the business. Lots of attention is paid to this area today, especially with the focus on the balance between fixed and variable costs, and driving unit costs down through outsourcing or utility computing. An infrastructure with a cost structure that allows a business to quickly shed IT costs during a downturn and allows for economies of scale when business volumes rise is a major asset. Conversely, an infrastructure that has a high, fixed cost structure and whose costs are independent of demand in a downside is a liability. For example, imagine your company has 50,000 employees, and as a result of bad economic conditions, it decides to eliminate 5,000 middle managers. If the IT organization procured its desktop and laptop resources based on a fixed value for a fixed number of years, then the organization will continue carrying the cost burden of the equipment and related services long after the people have left.

An infrastructure that allows a business to quickly shed IT costs during a downturn is a major asset.

Architectural value. Architectural value is derived from the capabilities of the infrastructure to meet business needs today and in the future. It depends on infrastructure characteristics such as operational performance, interoperability, portability, currency, scalability, resiliency, recoverability, security, and future change and compatibility. This aspect of value is very evident today in the areas of security and privacy. Investing in the architecture of the infrastructure to reduce the risk of virus attacks or theft of data provides tremendous value to an organization.

Operational value. While architectural value is associated with infrastructure capabilities, operational value is all about delivery. It is the actual performance provided by the infrastructure to meet business processing requirements such as the ability to meet service-level agreements and the security, integrity and resiliency needs of the operating environment.

Regulatory and compliance value. Does the infrastructure meet the requirements for control, security and integrity as required by a governing body or a key customer? Without this kind of value, a business might find itself out of business.

Measuring Infrastructure Value

Economic value is perhaps the most tangible to assess. First look at your business and how it measures itself. For example, an airline might use revenue per passenger mile (the total number of passengers multiplied by the total number of miles flown by the airline in a year) and income per passenger mile as key metrics in addition to the year-to-year change of both metrics.

The next step is to use these same business measurements as a framework for considering infrastructure economics. In the case of the airline, what is the infrastructure cost per passenger mile? How does a change in the infrastructure cost have an impact on profitability? Once you can express your infrastructure cost in terms of real business output measures, you can benchmark and compare your company to competitors.

In addition, compare the ratio of change in revenue to the change in infrastructure cost, year over year. That's your infrastructure's economic agility. Let's take an example. Suppose your company's revenue went up 40 percent since last year, and the infrastructure cost over the same period increased 20 percent. The ratio is 2-to-1—your company's infrastructure cost is moving at only half the rate of revenue growth. Conversely, if revenue dropped 20 percent and IT costs went down only 10 percent, the business apparently cannot shed IT infra-

structure spending as quickly as revenue declines, which would result in IT costs appearing as a higher percentage of revenue to the business—not a good thing in such bad economic times.

For architectural value, we use a subjective assessment method. For each area of your business, list the business requirements in terms of cost structure, scalability, availability and so on. Now rate (on a scale of one to 10) how well the infrastructure currently meets those needs as well as your strategic needs.

In the area of operational value, measure the cost to the business of outages or the "unavailability" of the systems it needs to function. What is the cost of a major data center or network outage in terms of lost staff productivity, lost business and even the potential customer desertions many companies experience when e-commerce sites go offline? Also, consider circumstances that are not as catastrophic as outages—what is the impact of, say, noncompliance with service-level agreements and other processing failures? As with the economic value, compare this number with external benchmarks.

When it comes to regulatory and compliance value, ask yourself what percentage of required regulatory guidelines and standards your infrastructure meets. What would be the cost to the business if those were not met?

Foundations and frameworks often can't be seen, and this invisibility may be the reason business management is often befuddled about the cost and value of infrastructure. Create your infrastructure value scorecard, and use it as the cornerstone for IT and business communication. **CIO**

Howard Rubin is executive vice president of Meta Group. E-mail him at howard.rubin@metagroup.com.





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Tim Buckley, CIO of Vanguard, took the lead in setting up a process for overseeing and protecting how customer data is used at the mutual fund giant.

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What's the payoff for CIOs becoming privacy champions? Better business, more secure IT and a higher corporate profile.

BY SUSANNAH PATTON

In September 2002, the Department of Defense asked JetBlue Airways to hand over more than 5 million passenger records. The airline, known for its discount fares and leather seats, promptly complied with the request, releasing names, telephone numbers and travel itineraries to a DoD contractor.

JetBlue's CIO at that time, Jeff Cohen, didn't hear about the request; the DoD went directly to the company's marketing department, bypassing IT altogether. Cohen discovered months later that the airline had released passenger information in violation of its own privacy policy.

JetBlue now faces class-action lawsuits filed by outraged customers and potentially millions of dollars in settlements or awards. Cohen has

Reader ROI

- ▶ Why it's the CIO's job to protect customer privacy
- ▶ How to set up a formal process for data access
- ▶ How to use the privacy issue to raise your corporate profile

since left the airline, but in retrospect he says that he and other top executives should have been involved in the decision to turn over such sensitive passenger data. "Everybody in a leadership position at JetBlue who had anything to do with data should have known about that request," Cohen says.

IS YOUR BUSINESS



JetBlue's saga is a cautionary tale for corporate America, which is increasingly using powerful data mining software and surveillance technologies to gather personal data and track movements of customers on and offline. One of the lessons learned is that CIOs would be wise to play a more central role in the shaping and enforcing of data privacy policies. As the guardians of data, CIOs are uniquely positioned to understand how customers and privacy advocates could view data collection and mining as intrusive. CIOs may not always make the final call on who gets access to customer data—top management will often issue such decisions—but they must do more than oversee data collection; they must reposition themselves as the champions and advocates for privacy. If they don't, what's to stop their company from becoming the next JetBlue?

CIOs can become privacy champions by initiating a formal process for data access and educating themselves about new regulations and technologies that can help protect data privacy. They can insist that their companies tell consumers how their data is used and how the latest technologies can track their habits. As marketers search for more information on customers to personalize sales and services, CIOs can secure for themselves a more strategic role by championing data integrity and facilitating the governance of what's becoming every company's most prized possession.

"When it comes to data privacy, as a CIO, you are the steward of it all," says Tim Buckley, CIO of the Vanguard Group. "You can't sit back because it gets tougher each year. More and more people are going to want access to your data."

A SHORT HISTORY OF SNOOPING

Surveillance isn't a recent phenomenon in America. But it's gathered new momentum in the past decade, as the number of inexpensive computers has multiplied along with storage capacity. "Thanks to the proliferation of computers, databanks and networks, once-distinct spaces of knowledge—credit card records here, medical records there, criminal records elsewhere—now form a single, coher-

How to Become Your Company's Privacy Champ

Five (Not So Easy) Steps:

Educate yourself on privacy regulations and anticipate new privacy rules that are likely to be coming down the road.

Take charge of developing a formal process for data access at your organization.

Win a seat at the management table by working with top management to make privacy a priority.

Insist on openness. Push your company to tell consumers what data is being collected and how it is being used.

Stand up for your data. Even if CIOs aren't always the final gatekeepers when it comes to data access, they can install privacy controls and oversee who gets the data. —S.P.

ent informational landscape that is easily mapped and controlled by government and business," writes Christian Parenti in his new book, *The Soft Cage: Surveillance in America from Slave Passes to the War on Terror*. On a typical day, we may make a call on a cell phone, drive through an E-ZPass or Fast Lane toll, use an ATM card and make an online purchase, leaving a digital trail that can track our movement, preferences and even political beliefs for businesses and government agencies to scrutinize.

Latanya Sweeney, founder and director of the Laboratory for International Data Privacy at Carnegie Mellon University, says the explosion in personal data can be measured by what she calls global disk storage per person, or GDSP, which she calculates by dividing the amount of hard disk storage sold each year by

the world's adult population. The GDSP has grown from 20KB of data in 1983 to 472MB in 2000. And the number continues to grow exponentially. "Experience shows that once our information is captured, someone will inevitably use it at some time for their strategic advantage," Sweeney says.

Increasingly, Americans are chafing at attempts by government and private sectors to sift through their personal data. In the past year, opposition from privacy advocates and politicians forced the Pentagon to temporarily drop its plans to track the movement of American citizens with its Total Information Awareness project. (Instead of completely shuttering TIA, however, the Pentagon merely renamed the initiative and classified aspects of it, essentially removing it from public view.) More recently, a growing number of states including New York and Wisconsin have pulled out of an anticrime database program known as the Multi-State Anti-Terrorism Information Exchange, or Matrix—initiated after 9/11 to track terrorists—citing cost and privacy concerns. Civil libertarians argue that Matrix, which combines criminal records data with private information such as property and business filings, endangers citizens' privacy rights.

The private sector is also taking hits on the privacy front. U.K. grocery retailer Tesco got caught conducting an unannounced smart-shelf trial with radio frequency identification tags on Gillette razor blades and canceled the pilot project after negative publicity. Retailers Wal-Mart and Benetton announced last year that (at least for now) they would keep RFID tags out of their stores.

But many businesses don't seem to understand the extent to which consumers value the privacy of their personal data. According to a recent Accenture survey, 60 percent of the 223 business executives surveyed said that privacy policies are the least important of five factors that influence consumer trust. Yet 51 percent of the 347 consumers surveyed said that they have declined to do business with a company because they were uncomfortable with its privacy protection.

The stakes are huge for companies, espe-



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cially those who ignore privacy concerns. Privacy & American Business, a nonprofit group led by privacy expert Alan Westin, is currently tracking 141 lawsuits against companies for alleged violations of consumer privacy. Already these lawsuits have netted plaintiffs more than \$130 million in penalties or settlements. "A privacy breach is now much more than a mere annoyance," says Rich Honen, a lawyer who specializes in technology and privacy at the Albany, N.Y., law firm Honen & Wood. "It can create a serious security risk and become a market issue for a company."

HOW TWO CIOs BECAME PRIVACY CHAMPIONS

When Buckley took over as CIO of the Vanguard Group two and a half years ago, setting up a leadership team to oversee data was one

of the first tasks on his to-do list. "Obviously, our number-one asset is our reputation and the trust of our clients," he says. "I saw we had to have a plan to protect our customer data." The plan went far beyond the often vague wording of the typical company privacy policy; it set up a specific process to follow when someone asks for access to personal data. If, for instance, a marketing person at Vanguard wants to get access to consumer data, they have to go through a formal process and get approval from the business owner before approaching IT. If marketing requires names and addresses for a client mailing, Buckley says, IT will provide that information if marketing can make a business case for the request. For a more general need, such as examining broad client trends, they would receive aggregated data.

Vanguard's leadership team, which includes Buckley, as well as the company's CSO and the

head of internal audit, created a system in which the IT department assigns a steward to oversee each line-of-business database. The steward is responsible for the integrity of a database and makes sure that adequate access controls are in place to protect the data. While the business unit leader makes the final yes or no decisions on data access and assigning "public," "confidential" or "highly confidential" classifications to all data, the IT side protects and defends the data.

If an internal marketing person at Vanguard wants access to client data, he must first get approval from one of four business line leaders, then send the approved request along to the IT steward. The IT steward won't turn over data until permission has been granted by one of the business line leaders. "At first I thought people in IT would say this is just a lot of bureaucracy," Buckley says. "But people get it. The IT people and the business people see that when it comes to data privacy, we need to err on the side of caution."

When an outside organization—such as a government agency—asks for customer data, the request goes first to the legal department, which requires a subpoena for most such requests. Vanguard's privacy policy states that it does not sell information about current or

PRIVACY AND SECURITY: You Can't Have One Without the Other

Acxiom thought it was doing its best to safeguard privacy. Last summer, it found out it was wrong.

A century ago, the clerk at your local store knew who you were and what you liked. She knew you had four children, lived on a farm and loved chintz. Your family doctor and banker also knew you. But the banker didn't always know what the doctor or clerk knew and vice versa.

Today, one company knows all these things and more. It knows your name, address, telephone number, Social Security number, relative income, number of dependents, credit rating, educational background and how much your house is worth. It puts you in one of 70 "lifestyle clusters," from "Timeless Elders" and "Married with Money and Children" to

"Single City Struggles" and "Rolling Stones." It even knows if you'd prefer an afternoon of golf over an evening of theater.

This company is Acxiom, the world's largest processor of customer information. Its clients include nine of the top 10 credit card issuers, as well as many of the major retail banks, telcos, insurers and automakers in the United States. It manages 20 billion customer records and maintains a database on 96 percent of U.S. households. (It sells the information in that database to help its clients understand and manage their own customers.) The U.S. government recently tapped Acxiom for assistance in developing the controversial Computer Assisted Passenger Prescreening System,

CAPPS II, designed to color-code passengers according to the likelihood that they might be terrorists.

In short, Acxiom is to privacy what al-Qaida is to world peace: a major threat.

Fortunately, officials at the \$958 million company understand that. Acxiom installed privacy safeguards many years ago restricting access to sensitive information with identity management systems that allow the data to be seen only by those employees working on specific accounts. Acxiom was also among the first in the data management industry to hire a chief privacy officer (who says that even she can't gain access to client files), and it makes sure employees understand what

former clients or their accounts to third parties. Nor does the company share such information, "except when needed to complete transactions at [the customer's] request or to make [the customer] aware of related financial products and services that [Vanguard] offers."

Creating a process for data protection was also high on Chris Kowalsky's must-do list when he became CIO of Education Management Corp. (EDMC), a Pittsburgh-based company that runs 66 universities and other postsecondary schools across the United States. Kowalsky understands that marketing people often need access to data, but if that entails sensitive student records, they have to go through a strict process to get authorization from business leaders and IT staff. If a marketing person protests or doesn't understand his company's data access rules, Kowalsky says he would alert others in that person's department. "In a perfect world, I wouldn't have to do that," he says.

That doesn't mean that Kowalsky, who spent 22 years as CIO for Pittsburgh-area hospitals before joining EDMC two years ago, is the sole gatekeeper of data. At EDMC, when a marketing person requests access to student records data, for example, she must go to a business leader at the vice president level, and

CIOs can raise their internal profile by championing data integrity and facilitating the governance of what's become every company's most prized possession.

then to human resources. The request then goes to the IT department, which creates an account and access code for the data. "My responsibility as a CIO is for technology and policy that protects data," Kowalsky says. Identity management systems, an intrusion detection system and technology that validates access codes help secure data privacy at EDMC. Kowalsky and his IT department make sure that the person requesting data still has access privileges (which are cut off automatically once someone leaves the company), and they regularly monitor data access logs for unusual patterns.

There have been several instances in the past two years, Kowalsky says, when he has questioned data access requests, particularly when it has meant that the data would be leaving the company. He has alerted top management, for example, when an external auditor sought data

access, and when an outside consultant asked for access to financial and student data. "There have been times when I needed to discuss some requests at a higher level," he says. "When you are looking at whether information can leave your organization, you need to be sure."

TO PLAY THIS GAME, YOU HAVE TO KNOW THE RULES

As CIO at Pittsburgh's St. Francis Health System in the late 1990s, Kowalsky spent months studying the ins and outs of the Health Insurance Portability and Accountability Act, or HIPAA, which governs how health-care institutions handle sensitive patient information. He read trade journals, studied HIPAA reports and fielded calls from consultants eager to share knowledge about the new regulations.

happens to them if they use the data for anything other than the purpose for which it's intended. "Yes, we've fired people for violating our privacy policy," says Jennifer Barrett, Acxiom's CPO.

Security, however, is another story. Acxiom has always kept most of its servers and storage units in separate vaults and behind firewalls. But the data that flowed in and out of those servers was not encrypted—a serious omission, as it turned out.

Last August, law enforcement officials discovered that the server containing much of this incoming and outgoing data had been penetrated numerous times. One hacker named Daniel Baas, a 24-year-old systems administrator at a data marketing

company that did business with Acxiom, cracked passwords for the server and over the course of two years downloaded the personal information of millions of Americans. And a group of hackers in Florida had access to the same server for three months last year. (So far, there's no evidence that these hackers either sold the data or used it themselves to steal identities.)

These breaches prompted Acxiom to hire a chief security officer last August, change its access and password procedures, and begin encrypting customer data. The company also had to endure 20 security audits by concerned clients. "We've rearchitected how the entire mechanism works," says Frank Caserta, Acxiom's

new CSO. "We restrict who can read and who can write the files. If someone is writing files to the [common] server, they can't read other files. And we have greatly limited the time that data sits on that server, from 30 days down to a few seconds."

Acxiom is currently using dozens of different encryption packages with various clients, but Caserta is hoping to evolve to a single default encryption standard for all of the company's data.

"We want to standardize around security the way we had standardized around privacy," Caserta says. After all, says CPO Barrett, "If someone does something stupid, we all end up with a black eye."

—Alison Bass

Now, as CIO at EDMC, he studies regulations related to the protection of student records so that he knows how long to keep them and who is allowed to access them. "CIOs have to have a working knowledge of new regulations," says Kowalsky. "Without it, we can't have any influence on a company's policies."

For years, information privacy in the United States has been protected only through an amalgam of narrowly targeted rules governing specific sectors, says Joel Reidenberg, a professor of law at Fordham University in New York City and an expert on data privacy. Where other parts of the world (including the European Union) have passed laws to protect data privacy, the American legal system has relied more on market self-regulation and litigation to right data privacy wrongs. That's all changing as an increasing number of privacy statutes are being drawn up by state and federal authorities. And that means that CIOs will have to start boning up on public policy. That's already happened in the health-care industry (with HIPAA) and in financial services with the Gramm-Leach-Bliley Act of 1999, which requires financial services companies to create privacy policies, and governs how information can be shared within and between institutions. New regulations for more sectors are sure to follow.

"CIOs need to recognize the uncertainty and start planning today," Reidenberg says. "Just because there are no privacy regulations governing your industry today doesn't mean that in five years' time it will remain unregulated."

In order to educate themselves on privacy issues, CIOs should make contact with the company's government relations department, which will probably be following privacy debates on Capitol Hill. At EDMC, Kowalsky has had to study the Family Educational

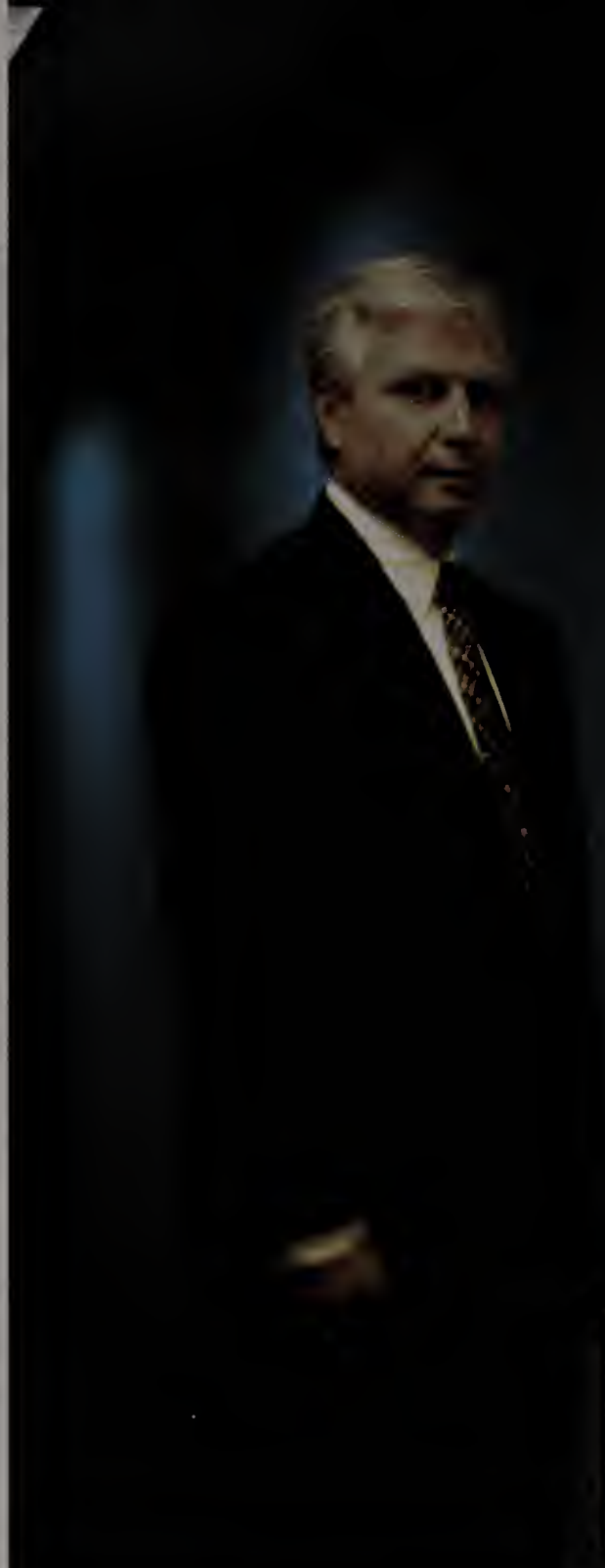
Keep Up with Privacy

Are you a privacy champion? To be one, you have to educate yourself about regulations and develop formal processes for data access. For more tips and updates, bookmark the **SECURITY AND PRIVACY RESEARCH CENTER**. Go to www.cio.com/security.

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Rights and Privacy Act with regards to student records and the Gramm-Leach-Bliley Act when he is dealing with student loan data.

Privacy education also includes awareness of the latest technologies that can protect data. Technology vendors have been slow to develop programs that can "anonymize" data or alert companies to the risk of a privacy breach, but some options are now hitting the market. For example, IBM last year launched Enterprise Privacy Authorization Language, or EPAL, an XML-based programming language designed to allow companies to automatically restrict access to sensitive data stored in corporate applications and databases. Niche vendors such as Pittsburgh-based Privacert sell software programs that can "de-identify" a data set in accordance with HIPAA. The resulting data can be shared freely and remains useful for bioterror-



Chris Kowalsky, CIO of Education Management Corp., says CIOs must have a working knowledge of new regulations so that they can influence their companies' privacy policies.

ism surveillance without jeopardizing individual privacy, says Carnegie Mellon's Sweeney, who invented the Privacert technologies.

"The trick for the CIO is to enable access to data while guaranteeing privacy," says Sweeney, who adds that CIOs are not likely to stop CRM or other data mining efforts that can add to a company's bottom line. "Computer technology got us into this mess by enabling widespread data sharing," she says. "But it is also important to know that computer technology can now get us out."

THE ADVANTAGES OF BEING A PRIVACY CHAMP

CIOs trying to champion data privacy are in a tough position, especially if they are not part of the management team. Marketers or gov-

ernment officials who want the data may call CIOs obstructionists if they don't provide access, and top management may call them meddlesome if they speak out on privacy and propose strict measures. But Buckley says that creating a process for data access allows the CIO to stick up for data privacy without fear of criticism.

Some CIOs may wonder why they should bother taking on this difficult assignment. After all, top managers are the ones who usually define privacy policies, and some companies appoint a CPO to oversee privacy-related issues. But if the company doesn't have a CPO, and the CIO doesn't stand up for the customers' data, no one will. And that actually creates an opportunity for CIOs to talk directly about privacy issues with top management, as Buckley and Kowalsky have done. "The board of directors and the chairman want to hear about data privacy," Buckley says. "I know my feet will be held to the fire on this."

CIOs can use such accountability to raise their own profile internally. "One of my top responsibilities as a CIO is to make sure that my superiors and my peers understand how information can be made available, and to ensure we have a process for safe data access," Kowalsky says. In fact, he believes that there is no way CIOs can influence their company's privacy policy unless they are working directly with top management. Kowalsky himself reports to EDMC's President and COO Bill Brooks and has been part of the executive committee since he joined the company.

THE JETBLUES

When its privacy scandal broke in September of 2003, JetBlue learned a costly lesson: Once customer data leaves your control, it can end up just about anywhere. This is what happened: After obtaining the passenger data from JetBlue, Torch Concepts (the DoD contractor) bought additional customer demographic information—including Social Security numbers—from the consumer data processor Acxiom (see "Privacy and Security: You Can't Have One Without the Other" on Page 52).



Jeff Cohen, former CIO of JetBlue, left after the airline cut him out of the loop on privacy protection.

The defense contractor then used the information from JetBlue and Acxiom as part of a pilot program to develop passenger profiles to assess the level of risk air travelers pose to security. The existence of these profiles became a cause célèbre when a passenger's Social Security number made it briefly onto a public webpage as a part of a presentation by Torch Concepts.

For all of its mea culpas (JetBlue publicly apologized to its passengers last fall), the airline still doesn't seem to understand the central role that CIOs should play in this issue. In fact, Cohen decided to leave JetBlue last year when he was told it was reorganizing, and that from then on he would report to the head of the sales and marketing department instead of the COO. "I don't think sales and marketing

should be the leaders of technology," says Cohen, who recently started an aviation software company called Vertical Software Group in Denville, N.J.

If Cohen takes on another CIO position in the future, he says that he'll make sure he's in the loop. In the meantime, he sometimes reflects on what he would have said if the DoD had come directly to him in its quest for passenger data. "I would have taken it to the executive committee and asked if we were jeopardizing our privacy policies," he says. "I would have asked the questions that I believe were never asked." **CIO**

Susannah Patton is a freelance writer living in Paris. Please e-mail Executive Editor Alison Bass at abass@cio.com with your comments.



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Stephen Warren, CIO of the FTC, had the foresight to line up a vendor in advance of congressional funding for the Do Not Call Registry.

HOW THE FTC RESCUED THE DINNER hour

Despite tight deadlines and a court ruling that temporarily shut it down, the Do Not Call Registry turned out to be one of the most successful IT projects in the history of government

BY ALICE DRAGON

Reader ROI

- ▶ How the CIO of the FTC got a head start on a high-profile implementation
- ▶ Why launching the Do Not Call Registry in stages proved to be a successful strategy
- ▶ How a performance-based contract allowed the FTC to share risk with the vendor

It was a quintessential D.C. summer morning—hot, humid, sticky. But among the small crowd assembled in the Rose Garden, no one had more reason to sweat than Stephen Warren. As President Bush stepped through the Oval Office doors just after 8:30 a.m. on June 27, 2003, to announce the official launch of the Do Not Call (DNC) Registry, the CIO of the Federal Trade Commission was listening anxiously to the earpiece of his cell phone. Warren needed to make sure that the system, which had launched at 12:01 that morning, didn't crash while handling the surge of early bird requests. It's not a good career move, after all, to make a liar of the president. The sweat trickled slowly down Warren's back as the number of registrants kept climbing, but the system held steady as the commander in chief reached the podium.



Stephen Warren, CIO of the FTC, and Lois Greisman, associate director of the Division of Planning and Information in the agency's Bureau of Consumer Protection, teamed up to get the Do Not Call Registry up and running in fewer than 100 days.

"Unwanted telemarketing calls are intrusive, they are annoying, and they're all too common. When Americans are sitting down to dinner, or a parent is reading to his or her child, the last thing they need is a call from a stranger with a sales pitch," said Bush, whose words aired live on *Today* and *The Early Show*.

Spurred on by the publicity, consumers began flocking to www.donotcall.gov and calling the toll-free number to place their phone numbers on the Do Not Call list. Within 72 hours, consumers signed up more than 10 million phone numbers, making it a federal offense for telemarketers to disrupt their dinner hour, or indeed call at any hour of the day or night.

Not many IT projects are tackled at lightning speed under the glare of national media attention. Fewer still involve a courtroom drama that shuts them down three months after going live. Yet,

despite these challenges, the Do Not Call registry delivered on its ultimate goal: giving consumers a painless way of preventing unwanted phone calls. This is the story of how the FTC pulled off one of the most successful IT projects in the history of government. Using such strategies as splitting the project into manageable phases, creating a performance-based contract and lining up a vendor before Congress came through with funding, Warren and his staff got the consumer registry up and running in fewer than 100 days.

"We view the Do Not Call Registry as one of the most successful privacy protections in the United States," says Chris Hoofnagle, associate director of the Electronic Privacy Information Center in Washington, D.C.

Planning for a Green Light

In 1994, Congress passed a law directing the FTC to come up with a way to prohibit deceptive or abusive telemarketing practices. A year later, the FTC's Telemarketing Sales Rule prohibited telemarketers from making repeat calls to consumers who've asked them not to call again. In 2000, when the FTC conducted a yearlong review to examine the impact of the Do Not Call provision, it became clear that it wasn't strong enough. Consumers were getting so fed up with unwanted telemarketing calls that many

states had established their own Do Not Call lists. In January 2002, the FTC proposed a regulation requiring telemarketers to subscribe to a national Do Not Call Registry and prohibiting them from calling consumers on that list.

Warren joined the FTC in December 2001—just as the agency began investigating how it could create such a registry. FTC Chairman Timothy Muris had tapped Lois Greisman, associate director of the Division of Planning and Information in the FTC's Bureau of Consumer Protection, to represent the business side of the project. He also wanted Warren—the new guy—in on the process from the outset.

"Usually the policy and legal people decide 'This is what I want' with no thought to feasibility, cost or alternatives," says Greisman. "For the first time, IT people sat down with policy and legal folks in the planning stage." Warren, who had previously been CIO for the Department of Energy's bureau responsible for cleaning up nuclear weapons production sites, helped the task force consider the feasibility of various technical options as it hashed out the details of how to build a list and get it in the hands of telemarketers.

Within four months, more phone numbers were listed in the **Do Not Call Registry** than votes had been cast for either **Bush or Gore** in the 2000 election.



The group identified five key components that the system should have: the consumer registry, telemarketer access to the list, a complaint system for consumers to report telemarketers who ignored the list, access to complaints and the list database for law enforcement agencies, and an interface to enable data sharing between the federal and state lists.

Warren quickly realized that the FTC didn't have the resources to build a DNC system internally. So he decided to line up a vendor in advance to give the project a running start as soon as it got the green light. With so much demand from consumers for the registry—the agency had received 64,000 responses to its call for public comment, and most were vehemently in favor—the FTC was under enormous pressure to make the system work flawlessly. So the task force agreed with Warren's recommendation to share risk with the chosen vendor by setting up a performance-based contract.

While Warren and his team evaluated vendors, political momentum for the project grew. Chairman Muris went before Congress in January 2003, asking for funding and permission to charge telemarketers for list access. Muris urged Congress to act quickly to get the list up and running in fiscal 2003, which ended Sept. 30. He outlined an aggressive time line, based on Warren's recommendation to split the project into chunks and roll it out in phases: build and launch the consumer registry in fewer than 100 days, launch the telemarketer registration and offer the list download two months later, and begin enforcement one month after that.

Meanwhile, the FTC awarded the DNC project contract to AT&T, contingent upon receipt of funding. The performance-based contract aligned incentives with the FTC's goals. The FTC wanted easy registration—and so did AT&T, since its fees would be based in part on the number of successful registrations.

In February 2003, Congress appropriated \$18.1 million to launch and enforce the

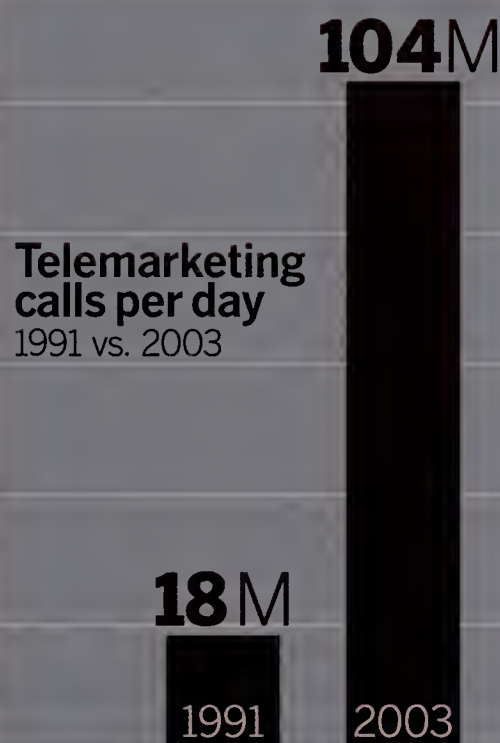
DNC Registry—including \$3.5 million earmarked for the contractor in 2003, and approximately \$2.5 million to cover internal IT costs to upgrade infrastructure systems and redesign the FTC's website. On March 11, President Bush signed the Do-Not-Call Implementation Act. By the end of March, the final legislative hurdles had been cleared, releasing the funds to start the project.

Bumps in the Road

Well before funding came through, the team had hashed through the details of how the consumer registry should operate. Consumers would be able to sign up either through a toll-free number with an interactive voice response (IVR) system or online at DoNotCall.gov. To sign up by phone, consumers would have to call from the number they wanted to register so that the automatic number identification service that enables caller ID could cross-check against the phone number they punched into their keypad. On DoNotCall.gov, consumers would be able to enter up to three phone numbers and provide an e-mail address for verification. The system would then generate an e-mail containing a link that the consumer would have to click on within 72 hours to confirm the registration. Privacy concerns led the team to limit the information retained to the phone numbers themselves; even the e-mail addresses used for online confirmation would be hashed, then discarded and the hashed copy used to complete registration.

The AT&T manager in charge of the Do Not Call project was Marjorie Windelberg. She routinely worked 100-hour weeks, keeping a sleeping bag in her office for months, and estimates that she met or talked with more than 500 people during the implementation. Along the way, there were some scary bumps in the road. For example, IVR provider West nearly backed out of the project in April because it couldn't provide service for deaf and hard-of-hearing callers.

Why We Needed a Do Not Call Registry



If you got **one** call during dinner in 1991 you got **six** in 2003.

SOURCE: Federal Register

So Windelberg hooked West up with the AT&T relay services group, which could assist deaf and hard-of-hearing consumers from a center in Georgia.

AT&T built the DNC system using a multilayered or N-tier architecture that would give both the FTC and AT&T the flexibility to modify the hardware or software of individual pieces of the system as needed. Envision a giant set of Legos where interlocking bumps are (in most cases) XML code. Each Lego piece or layer is designed to handle a specific task; as demand for a task increases, that layer can easily be expanded. The beauty of the N-tier architecture is that it allowed AT&T to cope with the initial onslaught of traffic efficiently. AT&T could add as many servers as needed to handle the early surge in volume and later repurpose them when the spike leveled off. Based on stress testing in June 2003, AT&T nearly doubled the number of servers at the AT&T data center from 16 to 28. "We gained a lot of flexibility being able to add and subtract servers and change their function," Windelberg says. The N-tier approach is also asynchronous, meaning that if, say, the database is slammed, phone numbers to be added to the registry can be held in a queue as servers continue accepting new phone numbers.

In addition to building the consumer registry website and IVR system, the FTC wanted to encourage the 25 states that had already developed their own DNC lists to share their data with the national list. In June, states began submitting their lists electronically and via CD-ROM; by late October, Windelberg's team would enable states to upload their data to the national list (or download updates from the national list to their own lists) using Web services. It quickly became apparent that not all of the state data was usable, so AT&T had to write routines to screen out dirty data (an East Coast state, for example, wasn't allowed to submit numbers with Western area codes.) Ultimately, the FTC would collect nearly 9 million phone numbers from state lists.

While Windelberg oversaw the myriad details of developing the DNC system, Warren and his staff redesigned and streamlined the FTC's website. They also installed a new T3 line and two more Web servers to handle the anticipated load from consumers with questions about the registry. And they posted and linked the FTC's revamped privacy policy to explain how the phone numbers it would be collecting would be used.

By June 27, everything was in place. Yet despite the endless planning, a small crisis erupted on day one. Rejected e-mails started



Marjorie Windelberg, the AT&T program manager in charge of the DNC project, estimates that she met or talked with more than 500 people during the course of implementation.

queuing up in the DNC e-mail servers as confirmation e-mails bounced back multiple times. At first, Warren and AT&T worried that it was a denial-of-service attack. Or maybe they'd misconfigured the servers. Turns out, though, that ISPs were interpreting the flood of DNC confirmation e-mails as spam, which they automatically blocked. AT&T quickly alerted its counterparts within the ISP community, and FTC attorneys began calling their ISP contacts to assure them that it was anything but spam. (Warren called his sister, a senior product manager at EarthLink, to help him clear up the problem there.) Within a few days, the situation was under control.

The first week proved to be "a continuous spike," Windelberg says. But the system never faltered, and within seven days, 18 million consumers had successfully placed their numbers on the list.

No Rest for the Weary

No sooner had the Rose Garden ceremony ended than the race was on to meet the next deadline—delivery in two months of a website that would allow telemarketers to register, pay for and download relevant portions of the list, which is segmented by area codes. Although charities, political groups and telephone surveyors are exempt, telemarketers would face a fine of up to \$11,000 each time they called a number on the DNC list. So the challenge was to cater to telemarketers across the spectrum with different call volumes, from individual agents using the phone to sell, say, vacation time-shares or a dating service, to national telemarketing operations with multiple call centers. Any entity requiring

more than five area codes would have to pay an annual \$25 fee for each area code downloaded; the annual fee for the entire list is \$7,375.

To address the range in telemarketers' call volumes, Windelberg's team built three options for accessing telephone numbers. Mom-and-Pop operations can go to www.telemarketing.donotcall.gov and type in up to 10 phone numbers at a time to see if they are legal to call. Telemarketers requiring a few area codes can download the numbers they need, and large telemarketers can download the entire national list (more than 300 area codes) in either XML or plain text format. All new entries are added to the list within 24 hours of registration.

Payment by credit card or electronic funds transfer (EFT) is handled through the Treasury Department's www.pay.gov site, which completed an upgrade necessary to support the list just a week before the FTC began collecting fees. The FTC also needed Pay.gov to send a message confirming that EFTs had cleared before it could allow telemarketers using that payment method to download phone numbers. "That level of responsiveness was not designed into Pay.gov," says Warren. "There was constant communication [with the Treasury Department]. Many weekends, people [were] working through handshakes. [It was] down to the wire on every one of these things."

To meet the telemarketing site's go-live date of Sept. 2 (the day after Labor Day), the AT&T developers engaged in a variation of extreme programming. For six weeks, testers sat beside coders, testing code as soon as it was written. But after hitting the second tight deadline, there was no rest for the weary. The clock then began ticking on the delivery deadlines for a state interface and the enforcement pieces of the puzzle.

The Courtroom Drama

As September drew to a close, 13,000 telemarketers had subscribed to the registry; more than 400 had downloaded the entire list. But they were not at all happy at the prospect of crossing more than 51 million phone numbers off their lists of potential customers by the compliance deadline of Oct. 1. The American Teleservices Association (ATA) and the Direct Marketing Association had both filed suit against the FTC, arguing that enforcement of Do Not Call would cause hundreds of thou-

sands of telemarketers to lose their jobs. The suits claimed that the FTC didn't have jurisdiction to oversee the DNC Registry and attacked the registry's constitutionality.

On Sept. 23, a federal judge in Oklahoma ruled that the FTC lacked congressional authorization to create the list. But on Capitol Hill, support for the registry was overwhelming. Just two days after the Oklahoma ruling, Congress passed a law authorizing the FTC to implement Do Not Call. Yet within minutes of the law's passage, a federal judge in Denver ruled that DNC unfairly limited telemarketers'

The Next Step: Do Not Spam!

When Congress passed the Can-Spam Act in December 2003, legislators were undoubtedly hoping to replicate the slam-dunk success of the Do Not Call Registry. But spam is likely to prove harder to tame.

FIRST, GIVING A SPAMMER A LIST of verified e-mail addresses and telling him not to spam them is like giving a 3-year-old an ice cream cone and telling him not to lick it. To a typical spammer, a Do Not Spam list would be akin to the Holy Grail. The fact that it would be illegal to spam addresses on the list would be no deterrence. While the majority of telemarketers run legitimate businesses and are eager to stay on the right side of the law, Lois Greisman, associate director of the Division of Planning and Information in the Federal Trade Commission's Bureau of Consumer Protection, says that between 50 percent and 80 percent of spam is fraudulent and thus already illegal.

Second, a large percentage of spammers send spam from outside the United States. That spam tends to originate from (or at least get routed through) servers in places that are very unfriendly to U.S. law enforcement. For instance, the FTC would have a tough time collecting a fine from a spammer operating in Uzbekistan.

Naturally, a lot of antispam vendors believe that they can help solve at least the first problem. Chicago-based Unspam, for example, would have the FTC use its one-way hashing technology to encrypt e-mail addresses on the Do Not Spam list. E-marketers would run their lists through the same software and any resulting hashes that matched the Do Not Spam list would have to be dropped from their lists. The company says that its software would be able to detect suspicious activity related to the verification of e-mail addresses against the Do Not Spam list.

The jurisdiction problem may be a tougher nut to crack. Although telemarketers who violate the Do Not Call list can be tracked down through their phone numbers, Greisman points out that it's more expensive to find spammers. And the investment is likely to be for naught since spammers tend to hole up in parts of the world that are least likely to permit extradition. "One thing we cared about enormously with Do Not Call was that we have real enforcement teeth at the end of the day, and we do," she says. "Spam is a whole lot more challenging."

Whether that challenge can be met is a good question—and one that the FTC must address when it issues its Do Not Spam report to Congress this month. —A.D.

right to free speech. The FTC appealed the ruling and asked the judge to stay his order pending the appeal. The judge refused.

The FTC had no choice but to shut off access to the system. On Sept. 26, Windelberg had her team power down the telemarketer site. Then the judge insisted that the consumer site go dark as well, which it did on Oct. 3. "Usually, when you pull the plug, you just pull the plug," says Warren. "We had to bring down the system in a stable configuration, then be able to bring it up again without any loss. We hadn't built it so we could turn it on a dime. But we turned it on a dime."

With nothing more to do but wait, Warren decided to go ahead with a long-planned trip to Italy. On Oct. 7, he was stuck on a train in Cinque Terre when his cell phone rang. The 10th U.S. Circuit Court of Appeals had sided with the FTC, saying it should be able to enforce the DNC list since the government was likely to prove that curbing unwanted phone calls is in the public interest. The injunction was put on hold and the registry had to go back online ASAP.

"I was going to have Stephen extradited," jokes Greisman. "But I thought I already owed him so much, it was not a good move. Besides, his people were up to it." On Oct. 10, the telemarketer site was up and running. The next day, the consumer registry and state data-sharing interface were also back online and the complaint log went live for the first time.

On Oct. 17, the Do Not Call list officially went into effect as law enforcement agencies gained access to the complaint data that was beginning to flow in. AT&T had designed the complaint system to accept a complaint (online or via phone) only if the number called had been on the DNC Registry for at least three months. Valid complaints were uploaded nightly into the FTC's existing Consumer Sentinel complaint logging system, where they were accessible to some 900 law enforcement agencies, including the three groups charged with enforcing the Do Not Call program: the FTC, the Federal Communications Commission and state attorneys general.

By the end of 2003, consumers had submitted more than 150,000 complaints; 45 telemarketers were the targets of more than 100 complaints each. By April, several states—including California, Illinois, North Carolina and Ohio—had sued telemarketers for calling consumers who had

How to Launch a Successful Project

The FTC's Stephen Warren got the Do Not Call Registry up and running in fewer than 100 days by employing these six strategies

- 1 Plan ahead.** If a project seems likely to get the green light, vet vendors in advance and award a contract contingent on project approval.
- 2 Think in chunks.** Break the project into manageable phases and focus on delivering key elements first.
- 3 Share risk.** Use a performance-based contract to share risk and align goals with your vendor.
- 4 Work together.** IT and the business should collaborate on the project from the earliest planning stages.
- 5 Test as you go.** Have developers and testers work in tandem so that code gets tested as soon as it's written.
- 6 Consider layers.** An N-tier or multilayered architecture offers flexibility and enables asynchronous processing.

signed up for the national DNC list. The FCC has also moved to fine AT&T \$780,000 for ignoring the DNC list.

In February 2004, the 10th U.S. Circuit Court of Appeals upheld the constitutionality of the DNC Registry. But Tim Searcy, executive director of the ATA, vows he'll take the ATA's suit to the U.S. Supreme Court. In the meantime, he says that call centers have closed, people have lost their jobs and telemarketers have blamed reduced earnings on Do Not Call.

Even so, consumer satisfaction with the system is almost unprecedented. A January Harris poll found that more than half of all U.S. adults (57 percent) say that they have signed up for the registry. Of those who registered, 92 percent report receiving fewer telemarketing calls, and 25 percent say they have received no telemarketing calls since signing up. As of April 2, the list contained 58.8 million phone numbers.

The process worked so well that FTC officials are following it as they explore the feasibility of developing a Do Not Spam list. (See "The Next Step: Do Not Spam!" on Page 63.) "We showed that as a small, independent agency, we could play in Internet time and deliver," Warren says. **CIO**

Senior Editor Alice Dragoon is one of the millions of Americans who now enjoys a telemarketer-free dinner hour. She can be reached at adragoon@cio.com.

Talk to Stephen Warren

Not many IT projects are built under the glare of national media attention and threat of lawsuits. That's what FTC CIO Stephen Warren had to endure to launch the Do Not Call Registry. Grill him with your questions on quick turnaround projects, contract control and vendor management when you

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Future issues of BPM Strategies will profile best practices and lessons learned from actual implementations from the most innovative Business Process organizations.

As more and more organizations seek to improve their responsiveness to changing business conditions—they are increasingly turning towards Business Process Management strategies, methodologies and solutions to enable their transformation to a truly adaptive organization.



The concept of a process centric organization isn't new. However, what is new (this time around) is that a wide selection of robust tools to support these efforts are now readily available. In fact, in many ways the current crop of BPM solutions and technologies are actually ahead of the traditional corporate mindset. Until senior executives "get religion" on becoming a process centric organization—the development, growth and benefits of business

process management will remain unrealized.

BPM Strategies will support the efforts of BPM champions and "Idea Practitioners" (as coined by Tom Davenport) by demonstrating the benefits attained through the adoption of process centric approach.

I would like to personally thank each of the contributors in this issue for demonstrating their commitment to the overall Process Community and for their contribution to our growing knowledge base of process management thinking.

Best regards,

Gregg V. Rock
Editor & Founder
grock@BPMInstitute.org

P.S. BPMInstitute goes to great lengths to ensure that the information we provide our members is valuable, educational and unbiased. I welcome your feedback, so please email me directly regarding topics you would like to see us address.

ABOUT BPMINSTITUTE.ORG:

BPMInstitute.org's mission is to leverage the collective genius of our members, industry thought leaders and experienced practitioners. We endeavor to expedite the adoption and implementation of business process management solutions and practices. We will facilitate knowledge sharing amongst BPM professionals on a 365/24/7 basis, as well as providing insight to the latest development and advancements through real-world case studies.

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The CIO's Primer to Business Process Management

BY JANELLE HILL

SUDDENLY ALMOST EVERY SOFTWARE VENDOR is talking about BPM. For the uninitiated BPM can mean business process management, business process modeling, business performance management, business performance measurement, beats per minute—oops! (Sorry, I was a music major.) In truth, all of these concepts are intimately related. Their common theme is enabling enterprises to become more adaptive. An adaptive organization can adjust its operational business processes in near real time to capitalize on opportunities, avoid threats and maximize corporate performance. This article will define BPM concepts and technologies. With this foundation, CIOs will be able to assess the importance of adaptivity to their enterprise's business model and decide whether they should pay attention to or ignore (at least for now) the BPM hype.

Business process management (BPM) is both a business concept and an emerging technology. The concept is to establish goals, define a strategy and set objectives for improving particular operational processes that have significant impact on corporate performance. It does not imply re-engineering all business processes. Business performance management and measurement (two other BPMs) emphasize using metrics beyond financial ones to guide business process management strategies. BPM the concept is not new; multiple process management methodologies such as Six Sigma and Lean Manufacturing exist. However BPM technology is fueling a renewed interest in process thinking. New BPM technology can help manage in real time all of the resources (human and machine) and information used in an end-to-end business process.

Of course software has long been used to automate tasks and reduce manual interactions. Thus it is important to distinguish business processes from IT applications. A business process is a sequence of activities performed by people and machines necessary to produce a desired result. It is initiated by the arrival of work (such as a phone call, faxed order or timing event) which triggers the

CONTINUED ON PAGE 9

Alignment is the Key to BPM Success

BY TOM FIELD

It's all about alignment.

Whether you're discussing how to set IT priorities, how to integrate disparate systems, or how to automate and manage core business processes ... it's all about alignment. It's about ensuring that people, systems and processes share a common language and objectives, and that their goal is to ensure maximum business value.

For nearly 17 years now, *CIO* magazine has preached the gospel of IT/business alignment, and the effort clearly has been successful. CIOs who sit in the executive suite are now the rule, not the exception, and it's a given that these IT leaders align their efforts with the greater goals of the business.

Now it's time to ensure that IT systems and business processes line up behind their leaders and achieve the same level of alignment and functionality.

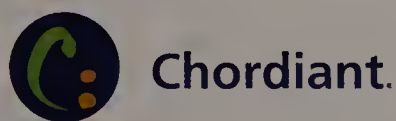
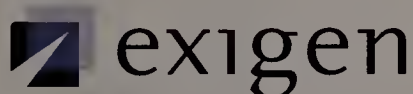
Strides have been made, no doubt. Motorola and GE popularized the practice of Six Sigma in the 1990s, and countless enterprises today practice variant versions of aligning and managing core business processes.

Yet, there is still much to discuss, and new ideas to exchange. This dialogue continues online at BPMInstitute.org and in person at BrainStorm's Business Process Management Conference Series. BrainStorm's BPM Conference is coming to San Francisco (June 22-23) and New York (November 3-4) and is Co-Chaired by:

- Janelle Hill, Program Director - Integration & Development Practice, METAGroup
- Brett Champlin, President of the Association for Business Process Management Professionals (ABPMP.org)

Again, it's all about alignment. As we align our thoughts and conversations about these core topics, we prepare ourselves and our organizations for the changes they need to undergo to achieve optimal IT/business alignment and, ultimately, more effective and efficient business processes.

Tom Field, former Executive Editor of CIO magazine, is Director of Content Development for CXO Media's Custom Publishing Group.



A Healthy Business Needs an Enterprise Process Management System

BY BRETT CHAMPLIN

It is not necessary to change.

Survival is not mandatory.

— W. Edwards Deming

ENTROPY HAPPENS. Just as you have to pay attention to managing your own long term health and wellness, you have to manage the health of your business. And, the health of your business is determined by the health of its processes. If you don't have a process management system, then you don't have a coordinated plan to ensure the business's long term viability.

Consider the following medical model for diagnosing your business's process health and prescribing a long term wellness plan.

- Perform a Preliminary Assessment
- Determine the Patient's Health Goals
- Diagnose the Patient's Health
- Reassess the Health Goals with the Patient
- Develop a Treatment/Wellness Plan
- Prescribe Treatment(s)
- Schedule Follow Up Visits

Assuming that the situation isn't a life-threatening emergency (that would involve some rapid responses to just get the patient to a stable condition for further assessment), you need to take some basic measures. For a medical assessment, that would involve measuring your height, weight, pulse, breathing rate, temperature, and blood pressure. A preliminary assessment of a business process might involve measuring the cash flow, market share, industry position, revenues, operating costs, and business cycle.

"What seems to be the problem?" Just as the doctor needs to determine the patient's complaint, we need to understand the known problems or 'pain points'. And like the doctor, we then ask a lot of questions to elicit any additional conditions or symptoms that will help us understand the immediate health goals.

To make a diagnosis, often, more specific measures need to be taken—blood tests, x-rays, EKG, ultra-sound, MRI, etc. The medical diagnostic model is to assess the symptoms, identify the disease(s), and determine the etiology—the environmental conditions that might have caused the disease. And finally, the doctor will assess

CONTINUED ON PAGE 11

Integration is the Key to Successful Process Management

As the leading independent provider of integration software, TIBCO provides one of the most comprehensive solutions for enterprise-scale business process management. Among the many companies that have benefited from TIBCO's BPM software is Daisy Brand, a leading manufacturer of sour cream products.

Using TIBCO's business integration and process management software, Daisy Brand's IS team deployed a workflow for order management in only three weeks. The workflow manages the order process to ensure that orders move forward within the set timeframe. Every time an order proceeds to the next step in the process, TIBCO's solution records that information and provides data that can easily be transformed into performance metrics.

"If an order is supposed to ship out within a certain number of hours and hasn't been completed, we can use TIBCO's

solution to trace that order and get it moving," said J. Kevin Brown, information systems manager, Daisy Brand.

In addition to improving the efficiency of order processing at Daisy Brand, TIBCO's solution enables the company to more flexibly accommodate customer needs. For example, a retail customer might change an order after it is sent to the warehouse—perhaps to request that the order ship on a different day or with a different amount.

The TIBCO-based system sends an alert to immediately notify the warehouse that the order has been modified so the logistics team can quickly implement the change.

"In the past, order changes presented a logistics challenge," Brown says. "But now, it's all automated, and we can accommodate our customers immediately."

To learn more about the value TIBCO has delivered to Daisy Brand and over 2,000 other companies around the world, visit <http://www.tibco.com/customers>



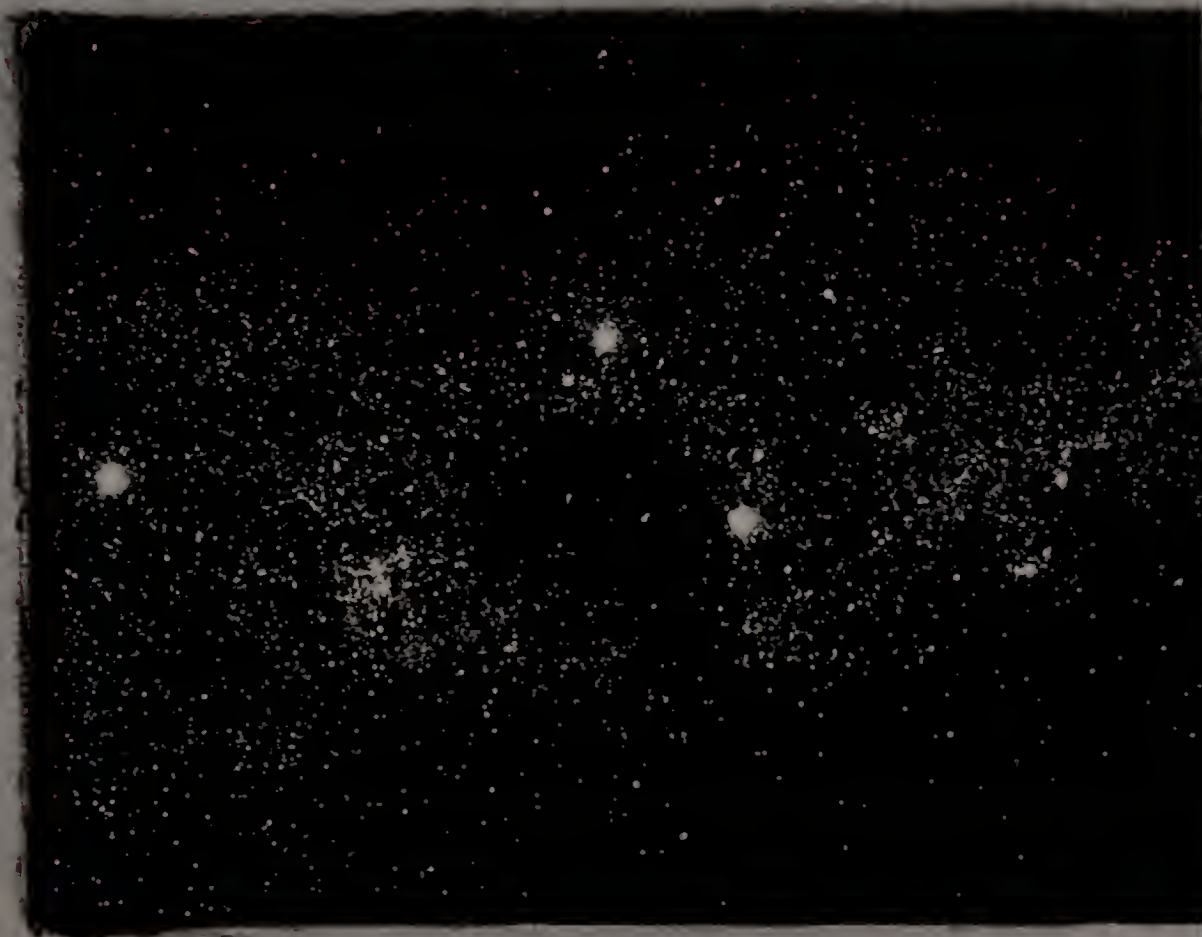
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FileNet Business Process Manager: The Path to Better Decisions, Faster

Processes are the paths of decision making—some are simple, others complex. Managing the flow of work, and information, along these process paths determines the speed, agility, and quality of decision making. That's why streamlining and optimizing processes determines the success of organizations.

Companies utilizing the right Business Process Management (BPM) solutions are conquering these challenges to gain a true competitive edge by automating, integrating and optimizing critical business processes at every level of their organizations. Today, FileNet Corporation's Business Process Manager is providing organizations of every kind with the comprehensive process management capabilities—including advanced analytics and simulation—needed to be successful.

TURN BUSINESS PERFORMANCE INTO COMPETITIVE ADVANTAGE

One of FileNet's Enterprise Content Management (ECM) solutions, FileNet Business Process Manager is a proven answer, helping turn business performance into a competitive advantage by:

- Increasing agility and accelerating responsiveness to customers and changing market demands
- Optimizing operational efficiency and resource utilization
- Enforcing corporate standards and improving process consistency
- Shortening process cycle times while enabling better decisions
- Reducing complexity of integrating people, processes and existing systems

Standards based, flexible and customizable to a wide range of industries, FileNet Business Process Manager is a proven solution that controls the flow of work throughout the business by streamlining, automating, and optimizing business processes.

Easily deployed, its event-driven architecture has the flexibility and scalability to handle the most complex business processes—involving millions of transactions, thousands of users, and multiple business applications creating

a unified business process management infrastructure that connects users and applications. Real time and historical tracking of these processes combined with process analysis and simulation capabilities allows maximum utilization of resources and process optimization.

Business Process Manager is based on the FileNet P8 architecture, offering enterprise level scalability and easy integration with other enterprise applications.

DELIVERING SIGNIFICANT ROI
FileNet Business Process Manager has delivered significant return on investment

for FileNet customers including:

- Decreasing loan processing decision cycle time from 7 days to just 7 minutes
- Automating the monthly payment of over 30,000 invoices to streamline operations and take full advantage of early-payment discounts
- Reducing Human Resources costs by \$1 million by providing employees with automated services and self-serve resources
- Saving \$3 million a year by driving high-performance processes and optimized workflow throughout a government agency

Korea's second largest bank, Woori Bank, is using FileNet Business Process Manager to speed loan processing, enable branches to focus on customer-facing activities, and boost employee morale.

Additionally, by improving workflow and reducing document retrieval time from multiple hours or days to 1-2 seconds, loan processing time has been cut in half—from six days down to three days. As a result, customer satisfaction has increased dramatically. Also, workflow automation has reduced staffing needs and minimized human errors, saving both time and money in the process.

With FileNet, Woori Bank has strengthened its competitive position and expects loan closing business to increase to US \$115 million a year. Additionally, the company has calculated cost reductions nearing US \$3 million a year for new business and US \$18 million in headcount and operations savings. The bank also anticipates a business boost of US \$23 million as a result of quicker turnaround times.



BPM and Executive Mindsets

BY ANDREW SPANYI

ANALYSTS ARE BULLISH on the potential for business process management, or BPM, software. Some industry estimates are calling for sales of BPM software to reach \$6.3 billion in 2005, up from \$2.5 billion just a couple of years ago.

But skeptics wonder whether companies will achieve a real return on investment with this new enabling technology, or whether the same mistakes will be made all over again.

While there are many other factors, arguably the single greatest obstacle to getting the most out of BPM enabling technology is the traditional mindset of senior executives. The traditional functional paradigm, where executives view their business as boxes on an organization chart, and IT practitioners see the business landscape as a set of applications and platforms, has done more to impede customer focused, business performance improvement over the past two decades than almost any other factor.

Organizations who wish to get the most out of the evolving BPM technology will need to begin by looking at the business from the outside-in, from the customer's point of view as well as from the inside-out. This involves concerted and collaborative effort by the executive team in explicitly defining customer requirements, typically in terms of value, quality and timeliness.

In light of the undeniable and simple truth that work gets done through cross-functional business processes, thoughtful executives will recognize that articulating strategy in business process terms facilitates IT project definition, implementation and communication. This requires assessing the gap between current and desired performance in business process terms, and developing a business process management plan which clearly indicates the ownership of the enterprise-level business processes and the required degree of improvement for strategic business processes and the enabling role of information technology.

Unless leaders adopt a more adaptive mental model, the traditional ways of thinking will stand in the way of deploying BPM technology to improve the flow of those cross-functional activities which create enduring value for customers and shareholders.

Andrew Spanyi is the author of Business Process Management is a Team Sport, Play It to Win! Visit the book's website at www.anclote.com/spanyi.html. He has worked with executive teams for nearly two decades, assisting them in transforming the way they tend to think about their business. You can contact Andrew at andrew@spanyi.com or (905)302-4061.

"Prior to implementing the solution, our branch office staff spent only 30% of their time on customer facing activities such as sales and customer service," reports Ju Lee, Head of the Business Process Re-engineering team for Woori Bank's Information Systems. "Today, they are spending as much as 70 percent of their time on similar activities. As we are now more focused on our customers, we are able to react much faster to changing market needs."

HELP COMPLYING WITH REGULATIONS

Because enforcement of policies and standard operating procedures are essential for complying with a host of new government regulations and enforcement initiatives, BPM is becoming an indispensable element of a compliance solution.

By integrating content and processes to immediately identify and initiate response to material events, FileNet BPM helps to reduce response time, ensures efficiency and process control, and helps companies address compliance initiatives.

One FileNet customer, a global Financial Services company, is implementing FileNet BPM at the heart of its Trade Processing solution to help ensure compliance and governance. Expected benefits include:

- Avoiding issues resulting from errors and misplaced transactions
- Eliminating lost documentation
- Ensuring accurate processing of trade transactions
- Enhancing regulatory reporting and analysis
- Enabling comprehensive tracking of activities

The customer will process over 8 million trades per year in the FileNet system, across multiple geographies, including sophisticated trade prioritization based on currency fluctuations. The implementation will ultimately substantially reduce operational risk due to the process visibility and tracking accommodated by FileNet BPM.

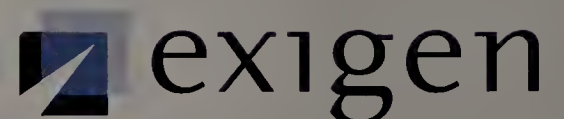
FileNet Corporation helps organizations make better decisions by managing the content and processes that drive their business. FileNet's Enterprise Content Management (ECM) solutions are designed to help companies manage the content and business processes that must come together to improve the way decisions are made—by individuals, across project teams and departments. FileNet's comprehensive solutions allow customers to build and sustain competitive advantage by managing content throughout their organizations, automating and streamlining their business processes, and providing the full-spectrum of connectivity needed to simplify their critical and everyday decision making. •

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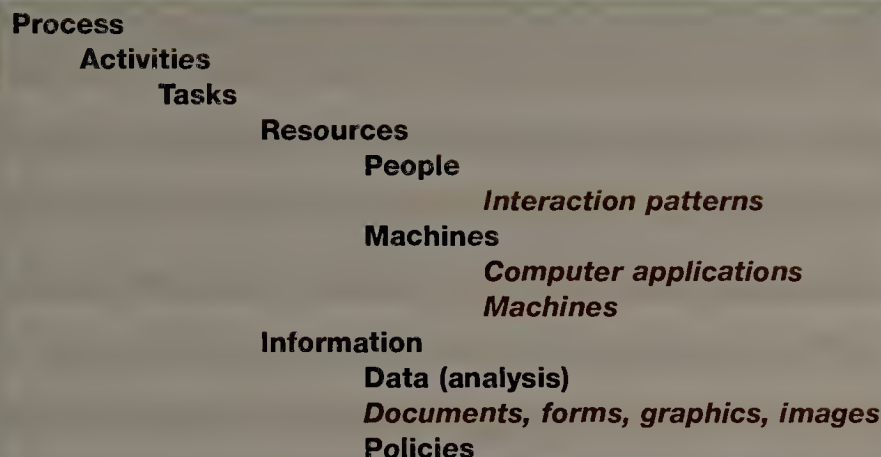
sequence of operational activities. An application is a logical grouping of tasks automated by a computer, with the objective of reducing or augmenting human interactions. Thus an application is a subset of the tasks of a business process. The human-centric activities of a business process have largely been un-automated (although some organizations use workflow automation to manage electronic work queues.) Figure 1 depicts these relationships.

A business process management suite (BPMS) is a new development environment that enables business users to collaborate with IT professionals in the design and development of optimized business processes, not applications, thus reducing the communication gap between business and IT. Ideally a BPMS supports a business process modeling (another BPM) environment that is shared by business analysts or process engineers, IT architects and programmers. The modeling surface or palette exposes increasing levels of technical capabilities to support these roles. Unlike earlier code-generating tools, the modeling environment creates XML metadata that describes how logic (both new and existing), data and human interactions should be sequenced and instantiated at run time. Changing a business process requires changing the graphical model, regenerating the metadata and redeploying process instances. This is a much simpler and faster approach to changing how work gets done. This faster rate of change to operational best practices is

what enables an organization to become adaptive.

To become an adaptive organization requires leadership and change management more than technology. People will need training and new performance incentives to drive new behaviors. CIO's have a unique perspective and opportunity to be enterprise change agents, having visibility across organizational silos and experience with other major technology driven changes (ie ERP, CRM). In organizations where time or cost to adapt business processes constrains business performance, the CIO should encourage the CEO to define a BPM strategy and become an

What is a Business Process?



early adopter of BPM technology. •



Janelle Hill is Co-Chair of BrainStorm's Business Process Management Conference Series. She has over 20 years of IT experience and is an industry expert on software infrastructure. She has held both technical and management roles in software architecture, database development, IT operations, and product marketing and sales. As lead middleware analyst for META Group, Ms. Hill advises user and vendor clients on the evaluation, selection and implementation of middleware products, market trends, competitor analysis, Web services standards and trends, SOA best practices, and strategies for building an adaptive infrastructure to enable business agility. and Ms. Hill has an MBA from NY University/Stern School of Business and a BA from Barnard College/Columbia University.

Innovating with Processes

Executive teams are seeking ways to dramatically improve and innovate operations in both daily and strategic tasks. But with decades of process technology, Six Sigma and other popular reengineering approaches, real-life results remain illusive.

Exigen was founded to break this trend by guaranteeing measurable financial results through state-of-the-art innovations for business processes. Our approach leads off with a rigorous business process assessment to identify and prioritize key opportunities for delivering the greatest value measured against corporate objectives. Experience tells us that within service industries there are five types of "operations leaks" to be measured:

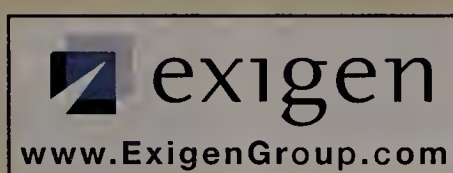
- Processing leaks during hand-off or routing of work to other departments
- Productivity leaks within tasks that rely upon manual or knowledge-worker intervention

- Accuracy leaks when complex or precise decisions are required
- Sourcing leaks when work cannot easily be moved from one location to another
- Capacity leaks when a fixed-cost infrastructure is not amortized over additional transactions

Exigen's industry-specific business process software and services are able to cure these operations leaks, giving sales people more time to sell, allowing back-office personnel to be more productive, and enabling manage-

ment to have greater control at the helm.

Most importantly, Exigen establishes a continuous improvement capability for business processes founded on a business case that aligns management objectives, operational processes and the underlying technology. Together, business and IT are able to lower risks and maximize returns for operational initiatives.



Process & Policy: A New Application Paradigm

A profound change is occurring in application architecture which promises to deliver more significant benefits to business than is possible with existing applications. Historically, applications have been developed using a database schema and function points as the center of design. However, a fundamental change in application design is about to create a major rethink in the way that applications are developed, deployed and maintained within organizations. This has major ramifications for both the actual and perceived value of business applications within the enterprise.

In this new architecture, business processes are the center of design with applications being created through the orchestration of components and the injection of rules. Businesses use processes and policies (rules) to determine how work is performed.

The manner in which work is undertaken within organizations is arguably what differentiates one company from another. It is the basis for innovation, brand differentiation and competitive advantage.

Applications are used to automate work and improve productivity. The application's core logic dictates how work is initiated, performed, moved through the organization, approved and completed. It is the core logic describing process and policy which defines how work is moved and decisions made (approvals). Unfortunately, this logic is so embedded within the compiled monolithic application code, that effecting business change is

prohibitive, slow and costly.

Any change in the way work is managed requires the supporting application logic to be changed. This means recoding the application by the IT organization. By the time the changes to the application logic have been made, and the application recompiled, tested and deployed, the change may be obsolete. The cycle can be never ending and is a significant barrier to ongoing productivity improvements, competitive advantage and innovation.

This disconcerting situation will become a thing of the past

with the emergence of business process applications (figure 1). These new and very different applications are created by the real time assembly of application components which are orchestrated by business processes into which policies are injected as part of the process flow. Orchestration is

accomplished by a business process management system underpinned by a services oriented architecture.

This new application architecture (figure 2) effectively separates the business logic from the other application logic. In doing so, and by providing intuitive, familiar and easy to use process diagrammers and rules editors (figure 3), control of the business is now placed where it belongs - in the hands of the business. Changes to processes and policies can be made quickly by those who are directly responsible for them and then have these reflected immediately in applications across the enterprise.

This innovative change in the design and form of applications

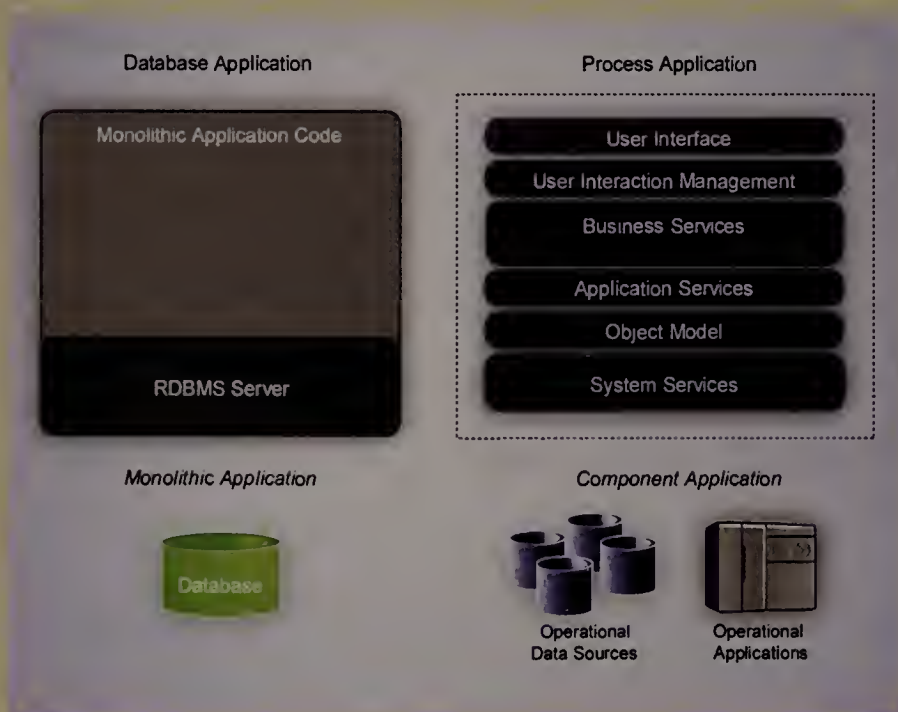


Figure 1. Database & Process Applications

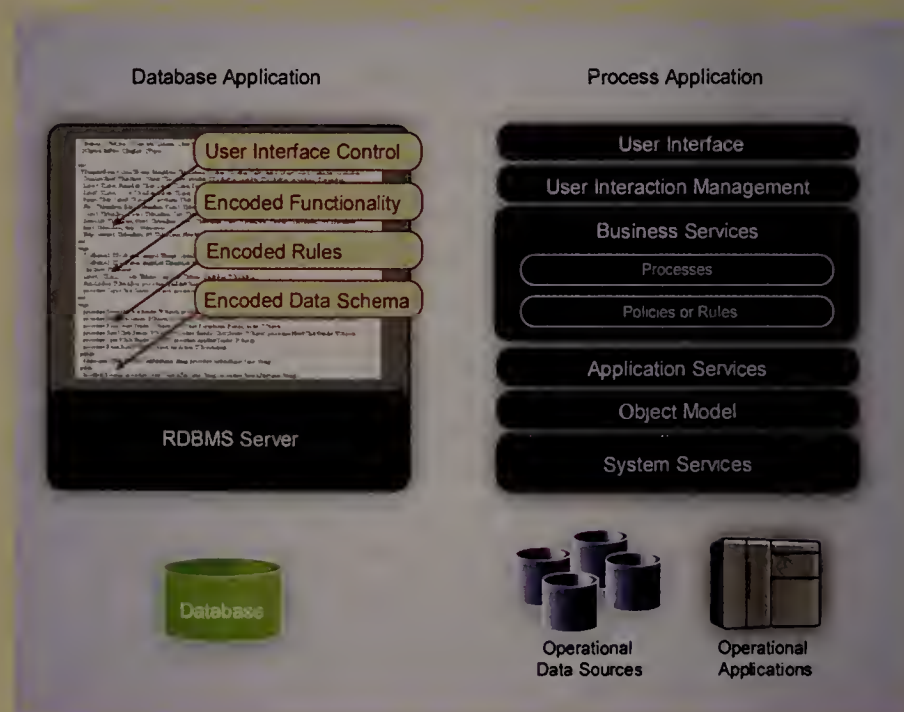


Figure 2. Separation of Business Processes & Policies (Rules)

is delivering significant business improvements for leading adopters. The automation and orchestration of end to end processes is enabling efficiency improvements by 30% or more as errors, handoffs and cycle times are reduced. Productivity increases of 25% or more can occur through reduction in training time and costs, while reductions in turnover have been achieved by empowering staff to make timely decisions in managing customers. Business risk is also mitigated through the correct processing of work, which also improves consistency, compliance and quality. Customers experience more efficient and effective interactions, improving satisfaction and retention. IT organizations also benefit through application component reuse, while leveraging and modernizing existing applications and systems, which reduces costs and improves productivity.

Arguably however, the most significant benefit provided by this new application architecture is that of business flexibility in managing change. Processes and policies can be changed rapidly and deployed in a fraction of the time than is possible with monolithic data centric applications. This is providing leading enterprises with a powerful new capability. The business can become more agile and adaptable than was previously possible; more innovative, as it is able to act quickly; more competitive, as it can respond faster to market forces and industry or government legislation.

These results herald the beginnings of a fundamental change in the way applications are developed, deployed and maintained. New

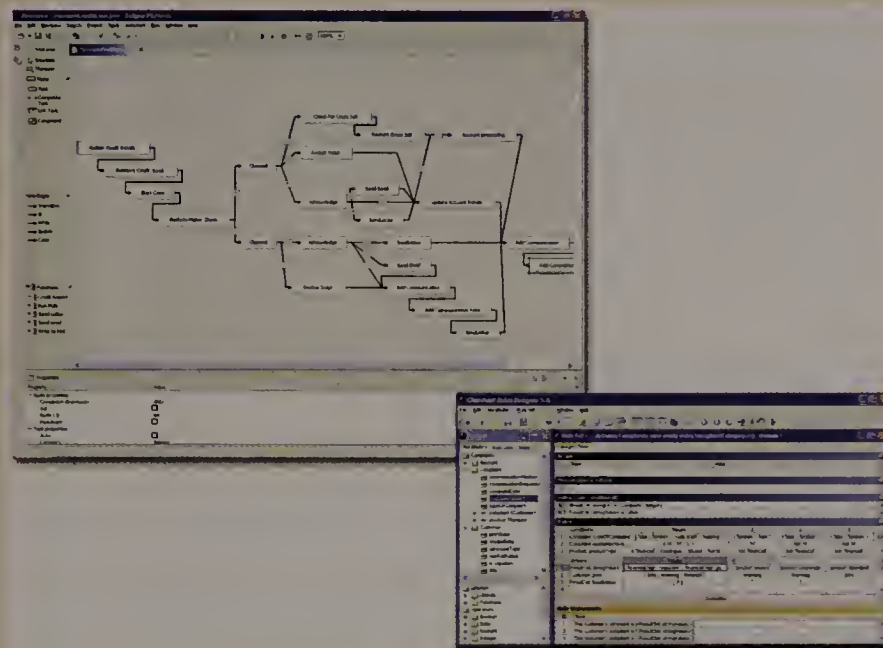


Figure 3. Chordiant's Business Process Designer & Rules Editor

process applications reflect, at long last, the unique ways in which businesses really operate. The ability for business people to manage and change directly the application's business services is a significant breakthrough, freeing the business from the constraints imposed by previous application design. As a result, organizations are now in a better position to witness significantly greater return from their IT investments, and to be able to utilise this to create greater value for their employees, customers and shareholders.

CONTINUED FROM PAGE 4

the patient's long-term health risks. For a business process, this might involve identifying known problems, process performance, the business environment and long term viability. Specialized tests might need to be performed to get more specific measures around things like cycle time, resource utilization, defect rates, waste, customer retention, etc.

Just as a physician has to understand how all of the body's systems work together and the patient's age and maturity, we need to understand how all of our business processes interact against a capability assessment model. This leads us to a reassessment of the overall health and wellness of our business processes and lets us determine a realistic prognosis and treatment plan.

After this we can prescribe specific treatments such as process redesign, cycle time optimization, retraining, reorganization, etc. Typically it will involve more than one of these and will need to be a part of a long term process management program which could be Six Sigma, quality management, supply chain management or some combination.

Ultimately, we need to ensure that our process management system will be aligned to the level of performance health we want to

achieve and maintain. Just like any other management system, how we automate and informate the process management system will have a lot to do with how well your processes will be able to adapt to change which is the key determinant in your business's long term health and well being.



Brett Champlin is Co-Chair of BrainStorm's Business Process Management Conference Series and President of ABPMP.org. Brett is an internal Process Consultant with a large insurance firm where he leads business and IT process redesign projects. He led the development of an enterprise process model repository and the selection of the enterprise process modeling, analysis and design tools. He has over 20 years of experience working in Information Systems and Management. He has an undergraduate degree in Computer Science from Roosevelt University and an MBA from Illinois Institute of Technology (IIT). Brett is a Certified Computing Professional (CCP) with proficiencies in Information Management, Systems Development, Software Engineering and Data Resource Management.

BrainStorm's Business Process Management

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Janelle Hill
Conference Co-Chair & Program Director
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"... This is a great opportunity for those of us who do process work to come together to share our experiences and hear the latest from one of the top research firms. As this discipline continues to grow and be recognized, it is important to have a venue like this where people can come and learn from the leading practitioners and industry analysts about what is really going on and what really works."

Brett Champlin
Conference Co-Chair & President
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BrainStorm's Business Process Management Conference Series will provide guidance and insight to Business and IT leaders looking to model, monitor, manage, optimize and innovate critical business processes in 2004.

BrainStorm's Business Process Management Conference Series provides a forum where conference attendees, industry experts and vendors work together to shape winning solutions and strategies. Extended educational sessions detail the latest technological advancements, proven "Best of Breed" solutions and trends in business process management.

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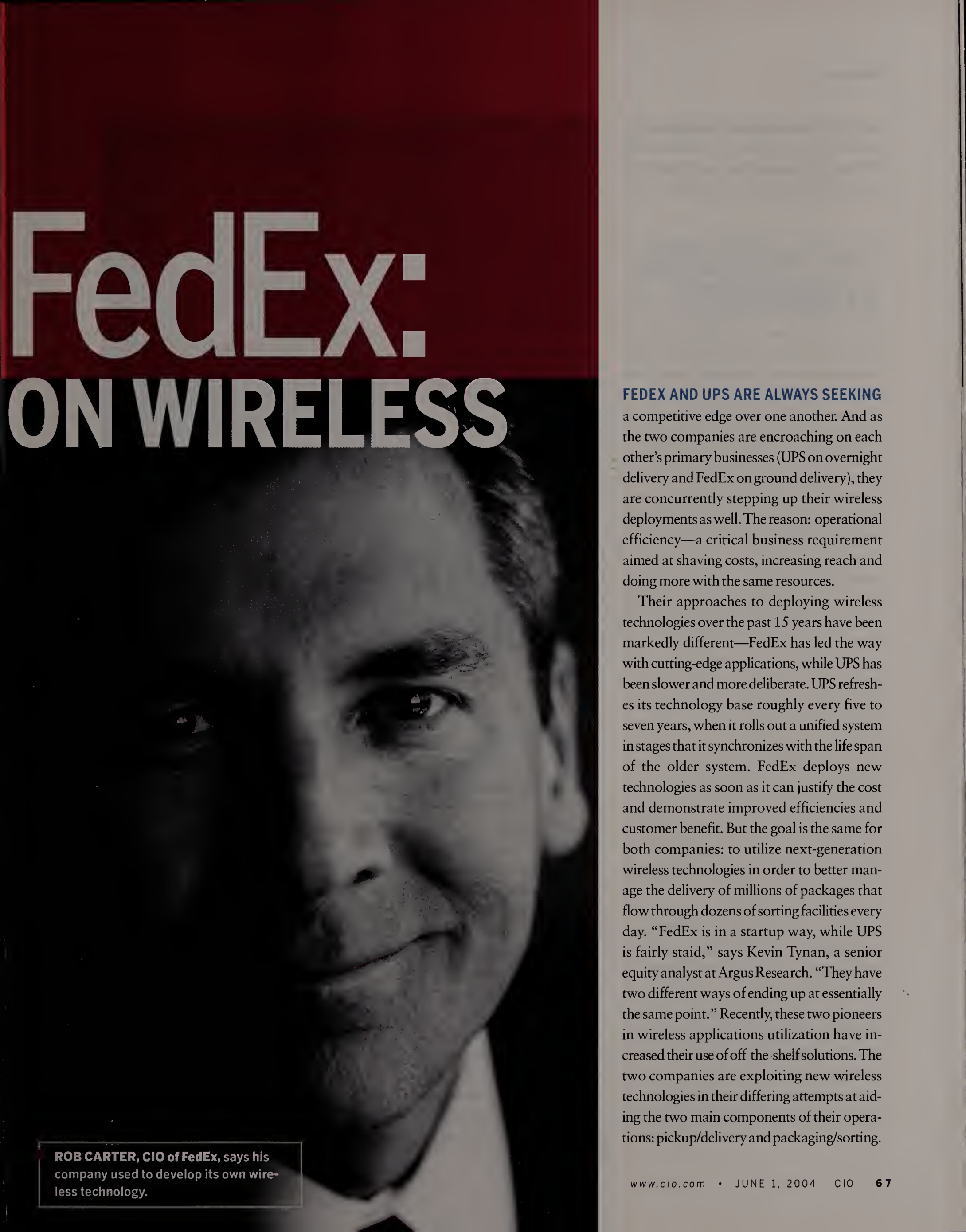
FedEx and UPS deployed wireless technology when few others dared. Now, they are using new off-the-shelf applications to compete in different ways and at a differing pace—leading the way once again.

Reader ROI

- ▶ How FedEx's and UPS's differing overall technology approaches are linked to their cultures
- ▶ Why they have deployed wireless strategies at different paces
- ▶ How they are using off-the-shelf wireless applications

KEN LACY, CIO of UPS, says his company waited until this year to begin updating its wireless technologies.

FedEx: ON WIRELESS



ROB CARTER, CIO of FedEx, says his company used to develop its own wireless technology.

FEDEX AND UPS ARE ALWAYS SEEKING

a competitive edge over one another. And as the two companies are encroaching on each other's primary businesses (UPS on overnight delivery and FedEx on ground delivery), they are concurrently stepping up their wireless deployments as well. The reason: operational efficiency—a critical business requirement aimed at shaving costs, increasing reach and doing more with the same resources.

Their approaches to deploying wireless technologies over the past 15 years have been markedly different—FedEx has led the way with cutting-edge applications, while UPS has been slower and more deliberate. UPS refreshes its technology base roughly every five to seven years, when it rolls out a unified system in stages that it synchronizes with the life span of the older system. FedEx deploys new technologies as soon as it can justify the cost and demonstrate improved efficiencies and customer benefit. But the goal is the same for both companies: to utilize next-generation wireless technologies in order to better manage the delivery of millions of packages that flow through dozens of sorting facilities every day. "FedEx is in a startup way, while UPS is fairly staid," says Kevin Tynan, a senior equity analyst at Argus Research. "They have two different ways of ending up at essentially the same point." Recently, these two pioneers in wireless applications utilization have increased their use of off-the-shelf solutions. The two companies are exploiting new wireless technologies in their differing attempts at aiding the two main components of their operations: pickup/delivery and packaging/sorting.

Wireless

Both are also looking ahead to potential applications of radio frequency identification and GPS wireless technologies (see “New Technologies Hit Mainstream,” Page 30).

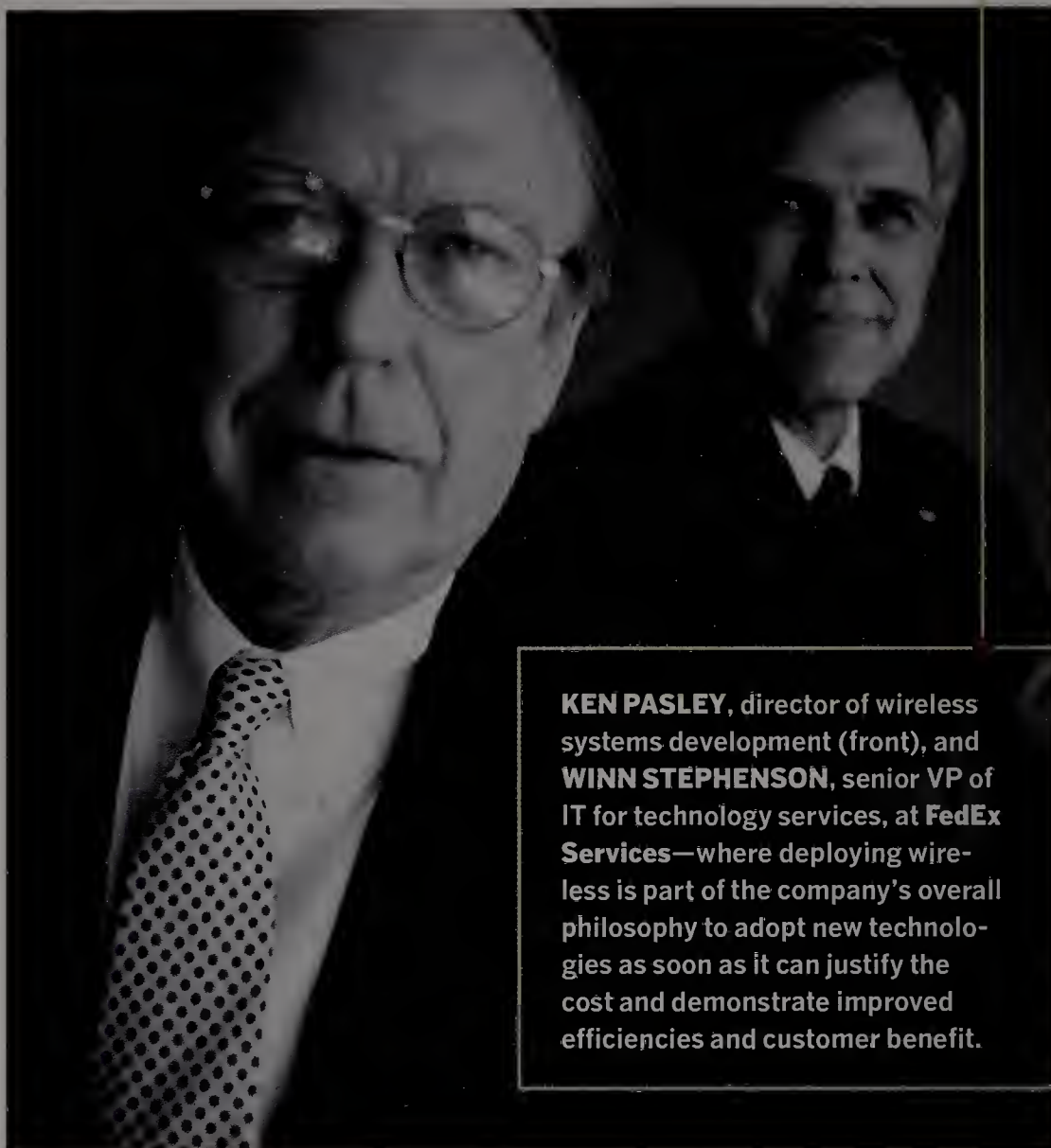
THE WIRELESS ADVANTAGE

UPS and FedEx have used various forms of wireless technology since the late 1980s, usually proprietary processes developed with vendors. But in recent years, both have switched to standards-based technologies such as 802.11b wireless LANs, Bluetooth short-range wireless links and general packet radio service (GPRS) cellular networks that provide lower development and maintenance costs, greater throughput and security, and lower acquisition and deployment costs.

“Wireless data connectivity is something we’ve done for many years. But we had to provide our own bandwidth and we had to develop technology to manage it. Now that commercial products are out there, we have alternatives,” says FedEx Executive Vice President and CIO Rob Carter. But as with their overall approaches to technology, the companies’ wireless strategies differ. “You only have a six-month advantage in this industry. The technology is not a secret, it’s what you do with it,” says UPS Senior Vice President and CIO Ken Lacy.

Under Carter’s leadership, FedEx jumps on new technologies and often adopts them as soon as they are ready. For example, the company deployed wireless networking as soon as it was available in 1999.

By contrast, Lacy focuses on the nuts-and-bolts factors that drive changes in UPS’s technology investments. Under his stewardship, UPS waited until this year to begin updating its various wireless technologies all at once as part of a larger program to improve package scanning and tracking. But the contrasts can blur a bit: UPS is willing to make intermediate changes as technology shifts present new opportunities, and FedEx is looking ahead to the likely long-term, beneficial technologies so that there’s a framework for its experiments.



KEN PASLEY, director of wireless systems development (front), and **WINN STEPHENSON**, senior VP of IT for technology services, at **FedEx Services**—where deploying wireless is part of the company’s overall philosophy to adopt new technologies as soon as it can justify the cost and demonstrate improved efficiencies and customer benefit.

PICKUP AND DELIVERY

Every second really does count when you handle 13.6 million packages a day, as UPS does, or even 5 million, as FedEx does. Wireless technology lets these companies shave off precious seconds throughout the delivery process. (Each is spending more than \$120 million—spread over three to five years—on current wireless efforts, which is a relatively small portion of each company’s roughly \$1 billion annual IT budgets.)

Both UPS and FedEx rely on near-real-time data to manage their operations, and the only way for the companies to get this near-real-time information is through the use of wireless technology in the field and in their facilities.

Their massive scale also favors the use of global standards, which provide more vendor

choices and lower technology costs. That’s why both companies’ efforts revolve around the same technologies (802.11b, Bluetooth and GPRS), which they use to address similar challenges. One of three related Institute of Electrical and Electronics Engineers standards for wireless networks with ranges of about 300 feet, 802.11b provides throughput of up to 11Mbps and requires that client devices connect to an access point, much like an Ethernet PC connects to a hub or router. Bluetooth is an industry standard for wireless networks, with a range of about 10 feet and a maximum throughput of about 1Mbps. Client devices automatically connect when they come in range, making it suitable as a replacement for wires between devices, such as connecting headsets to cell phones or handhelds to printers. And GPRS is a digital cellular technology that can transmit both voice and data, with a maximum throughput of about 100Kbps.

PHOTO BY BEN PEARSON

Its range varies from several hundred yards to several miles, depending on the density of obstructions such as buildings. It is used on the global system for mobile communications standard cellular networks, which are the standard throughout Europe and widely deployed elsewhere in the world, including the United States and Canada.

Both UPS and FedEx have tens of thousands of couriers roaming the world to pick up and deliver packages, making millions of stops per day. Thus, it's no surprise that the majority of their wireless efforts focus on their courier operations. Their challenge is to use wireless to speed up the process to improve

visits each day. This eliminates the issue of managing keys. Nevertheless, FedEx also hopes to save couriers' time by switching to Bluetooth, a wireless technology that does not require couriers to line up the PowerPad's infrared aperture with the drop box's. However, Bluetooth's power consumption complicates this effort, according to Pasley, since its utilization would require couriers to change drop box batteries more frequently.

The company would also love to skip drop boxes that are empty, so it is testing the reliability of Bluetooth to transmit a package detection signal to an approaching courier. But, there is a risk that a drop box that signals

customer site on packaging rules or export regulations, as well as order supplies. Today, the courier has a thick manual that is usually left in the truck.

USING HANDHELDS AT UPS

A new handheld, the Delivery Information Acquisition Device (DIAD) IV, is UPS's counterpart to FedEx's PowerPad. Functionally, the DIAD IV is analogous to the PowerPad, except the 70,000 handhelds transmit the data directly to UPS using a digital cellular connection. Several years ago, FedEx installed cellular transmitters in its trucks to send package data. They chose to keep that infrastructure and simply switched to Bluetooth radios to connect the handhelds to the trucks. UPS used direct connections in its previous DIAD III handhelds and saw no reason to drop the direct connection from the handheld to the central UPS operations.

UPS will deploy Bluetooth in its new handhelds to enable applications such as processing customer credit cards within buildings where GPRS cellular signals may be blocked and time card reporting within UPS facilities as well. UPS is also studying the capability of Bluetooth to facilitate time and motion studies, such as monitoring the number of times a driver opens a door or exits and enters the vehicle. Supplementing the new DIAD IV with Bluetooth is a small, incremental cost, says John Killeen, UPS's director of global network services, but well worth adding—even before a definitive use is found.

UPS also expects to implement GPS satellite-based tracking systems in its DIAD IV, so couriers can provide better customer service. For example: A package could be rerouted in transit, so if a customer calls with a last-minute request to change the delivery address, a geospatial application could help the driver find the most efficient route to the new location, says Killeen.

Their approaches to deploying wireless technologies have been markedly different—FedEx has led the way with cutting-edge applications, while UPS has been slower and more deliberate.

customer service. To do this, both UPS and FedEx are providing new wireless handhelds to their couriers, as well as exploring ways to use wireless technologies in other equipment.

SAVING TIME AT FEDEX

The company's new PowerPad device uses a Bluetooth radio to send package information—scanned during pickup—and frees the courier from having to dock the handheld in order to activate the data transfer, which shaves off about 10 seconds per stop. The PowerPad alone will save the company \$20 million per year among the 40,000 couriers, says FedEx's Ken Pasley, director of wireless systems development at FedEx Services, the company's logistical arm.

FedEx's PowerPad also has infrared connectivity, which FedEx uses to send lock and unlock signals to the 50,000 drop boxes it

it is empty actually has a dead battery, which would cause a courier to neglect packages and jeopardize FedEx's promise to deliver packages on time.

In about a year, FedEx will add 802.11b radios to its PowerPad terminals, mostly to keep up with Microsoft's operating system evolution and the improved processing power of the Intel XScale processor that will debut at that time. A specific function is yet to be determined for 802.11b in those terminals, but true to its overall technology strategy, FedEx would rather have the technology in place before it's needed than lose ground to competitors later.

Couriers do more than pick up and deliver packages; they also answer questions and take orders for replacement supplies such as labels and packing boxes. FedEx would like to take advantage of that customer face time to offer more services and reduce the time needed to do so. Thus, FedEx may develop information look-up and retrieval systems that would enable couriers to answer questions at the



JOHN KILLEEN, director of global network services for **UPS**, says his company will start using GPS technology in its handhelds to help couriers provide better customer service.

SORTING FACILITY DEPLOYMENTS

Behind the friendly courier you see every day is a massive operation of package centers, sorting facilities and hubs through which packages travel. For example, FedEx's main hub in Memphis, Tenn., handles about 2 million packages a day in a group of runways and buildings that take up about 1.5 square miles and make the Memphis airport the number-one cargo airport in the world. UPS's Worldport hub in Louisville, Ky., has a similar scale. Even a small facility, such as the Richmond, Calif., UPS sorting facility (which is one of the first to receive the new scanning systems), is a stadium-size maze of belts and funnels through which packages move as they are

unloaded from trucks and trains onto other trucks and trains for transshipment. For both UPS and FedEx, wireless technology has improved operational speed and accuracy.

The business challenge for both companies is to reduce the cost of sorting. In the sorting facilities, both companies use a device called a ring scanner, which is a bar code reader mounted on two fingers and wired to a terminal strapped to the forearm.

Currently, both companies use the same devices, made by Symbol Technologies and Intermec Technologies. But UPS is replacing its model with a new model from Symbol and Motorola that moves the terminal to the waist and uses Bluetooth to communicate with a finger-mounted scanner. That's because UPS loaders scan packages as they place them in trucks, which leads to cords getting caught on box corners and breaking, slowing operations and requiring a stock of replacement devices

to be maintained. By switching to the Bluetooth system, UPS expects to reduce scanner maintenance costs by 30 percent, downtime by 35 percent and the need for spare parts by 35 percent. The system also uses 802.11b to transmit package data in real-time, so UPS's inventory systems can flag issues and report to customers faster. (The old systems stored the data, which required loaders to transfer status periodically.)

Deployed at about a dozen facilities so far, 55,000 of the new scanners will be rolled out during the next five years to about 1,700 facilities. Richmond employees prefer the waist-mounted device. "I like them better than the old ones, which feel like they weigh 8 pounds by the end of the day. And in the summer they smell because of the sweat," says Jermaine Timms, a loader at the UPS sorting facility in Richmond, Calif.

The old scanners also had to be triggered for each scan, like a camera. The new ones are perpetually scanning unless they are turned off, saving time and effort for the loaders. "It's easier to log in and out of our trucks, and it's easier to scan," says loader Natasha Woodson. "Despite the changeover, we kept processing times even. Now, we see gains already in the first month," says Tim DeLaVega, the technical support group manager.

But FedEx is sticking with the older, forearm-mounted model. A big reason is that FedEx doesn't use ring scanners as widely as UPS, whose employees simultaneously scan packages and transfer them to the destination truck or container. Because FedEx tends to deliver smaller packages, it doesn't need as many people to pick up individual boxes, and so doesn't see the occasional cable break

Share Your Opinion

For both UPS and FedEx, wireless technology has improved operational speed and accuracy. But the two shipping and delivery kingpins adopt new technologies with opposite approaches—fast as a startup or methodical as a giant. Is one strategy more promising than the other? What works best in your industry? Go to the online version of this story, scroll to the bottom and **ADD A COMMENT.**

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as a significant issue.

FedEx also faced a problem with Bluetooth: signal interference from its 3-year-old 802.11b network, which used the same frequency, as well as from the radio noise emitted from sorting belts' engines and from the lights. Rectifying that interference would cost too much, says Pasley. Because UPS is upgrading its entire scanning system, it could design the devices and access points to accommodate both Bluetooth and 802.11b. In a technique called time-division multiplexing, the scanners alternate between Bluetooth and 802.11b, so their signals don't conflict.

As they move onto new wireless platforms, both companies are also changing their approaches to network security. Years before there was an 802.11b standard, both UPS and FedEx had adopted predecessor wireless networks. With wireless networks both proprietary and novel, there was little chance of catastrophic disruptions. But today, "if

UPS vs. FedEx:

► **Main hub:**

UPS **Louisville, Ky.**
FedEx **Memphis, Tenn.**

► **Total packages handled each day:**

UPS **13.6 million**
FedEx **5 million**

► **Number of air deliveries daily:**

UPS **2 million**
FedEx **3.1 million**

► **Wireless devices in field:**

UPS **90,000**
FedEx **80,000**

► **Wireless devices in sorting facilities:**

UPS **55,000**
FedEx **70,000**

► **Wireless access points:**

UPS **9,000 (by 2009)**
FedEx **5,000**

customers. How do you get a small customer to play in that world?" asks Lacy. To justify its cost, "you need to get more than a bar code [tracking number]," he says. Still, "It's a when not an if," says Winn Stephenson, FedEx Services senior vice president of IT for technology services.

Basically, UPS and FedEx will need to develop wireless applications that can handle disconnects. "You can never assure 100 percent accessibility, so there will be times when the driver is out of communication. How do you recover from that?" asks FedEx's Carter. Plus, wireless networks still carry less data than the wired networks that most enterprise applications expect, he notes. Applications must be designed with that narrower bandwidth in mind.

Despite those challenges, Carter sees great payoff from wireless: "There's the phenomenon of interconnectedness. It allows drivers to talk, computers to interact and businesses to work together. Whether it's wireless routing or fueling trucks, it's all happening dynamically." As UPS and FedEx are showing, it is wireless technology that provides the medium through which that dynamic exchange happens.

Although few companies have the scale of UPS and FedEx, they can adopt many of the wireless technologies scaled to their size and use devices and network components that fit their operations. "Often, vendors will build a device to our [request for proposal] spec, and we'll often see them go to market," notes Pasley. Other wireless adopters will face the same issues that FedEx and UPS faced in deploying the new standards-based wireless technologies, and often discover similar answers. "They led the industry in solving the early problems," says Alan Varghese, a senior director of wireless at Allied Business Intelligence, "and now others are seeing there's a lot more knowledge and expertise available so they can climb on the bandwagon." **CIO**

Galen Gruman is a San Francisco-based freelance writer. He can be reached via e-mail at ggruman@zangogroup.com.

The business challenge for both companies is to reduce the cost of sorting packages.

[hackers] jam our wireless network, we're in real trouble," says FedEx's Pasley. So "when 802.11b showed up—with security and standards—we immediately deployed it." FedEx has deployed over 5,000 802.11b access points in its facilities since 1999, shortly after the standard was finalized. UPS will have about 9,000 802.11b access points in place by 2009. "We don't want to interfere with someone else's network or the reverse," says UPS's Lacy. Both UPS and FedEx use the maximum security settings provided by 802.11b's wireless equivalency protocol key encryption—UPS augments it with a proprietary Symbol protocol called Key-Guard—and expect to adopt the Wi-Fi protected access standard soon, followed by the 802.11i security standard when that is finalized.

SEEKING NEW BENEFITS FROM WIRELESS

Outside of the two delivery companies' major package scanning retooling efforts, FedEx and UPS continue to investigate what business benefits they might gain from other wireless technologies. Two have gained particular attention: RFID tags, which could replace bar code scanners, and GPS, which can precisely locate field units.

But RFID requires very large capital investments—not just in readers but in the tag writers as well—plus standard data models so that different recipients can use tags from different sources. "We have several million



IT on the Campaign Trail

The 2004 presidential race may well hinge on which party most effectively exploits data mining tools to get out the vote

BY ELANA VARON

Five months from now, President George Bush and Sen. John Kerry will wage their final battle for the White House. The race will ultimately be decided by which candidate (and which party) can mobilize more of its supporters from the time the voting booths open at dawn on the East Coast until they close in Hawaii 19 hours later. And who does this best depends on IT.

In this year's presidential election, political operatives are relying more than ever on CRM-type systems to comb voters' histories and demographic data to find those supporters who will vote for and perhaps contribute to their cause.

To paraphrase James Carville, "It's the database, stupid."

Both parties have invested millions in central, state-of-the-art data warehouses, data mining software and Web-based user interfaces,

creating arsenals of marketing tools that rival those of large corporations. The Republicans, who started building this capability in the mid-1990s, got a jump on the Democrats, who have raced to catch up since 2000. By their own admission, the Democrats still lack some of the capabilities that the GOP already has in place, including the ability to give every field worker in every state online access to voter information. However, says Laura Quinn, managing partner with QRS Newmedia, who developed the Democratic National Committee's post-2000 IT strategy,

the Democrats couldn't think of winning without the investments the party has made to date.

Regardless of who's ahead at this particular juncture, the party regulars agree on one thing: The 2004 presidential race may well hinge on how the donkey and the elephant use IT.

Reader ROI

- Why the 2004 presidential campaign may hinge on IT
- How the Republicans got a head start on data mining
- What the Democrats are doing to catch up

Mass Media Burnout

Candidates for national office and their respective parties spend fortunes to market themselves to voters through television, mailings, telemarketing and door-to-door canvassing. Bush spent \$186 million to win his first term in 2000, while Gore spent \$120 million, according to the campaign finance website OpenSecrets.org. Just like corporate marketers, political persuaders want to spend their money most efficiently by targeting people most likely to vote for their candidate. "Politicos are fond of saying that a campaign is a one-day sale," says Carol Darr, director of the Institute for Politics, Democracy and the Internet at The George Washington University. If a candidate can't get people to the polls on that day, he'll be out of business.

Operatives want to focus their firepower on two groups of voters: Those who (like a company's highly valued customers) are already in their camp, and those who (because of their views and preferences) can be won over. According to a poll published in March by the Pew Research Center for the People and the Press, undecided voters account for 29 percent of the electorate, but a mere 6 percent are truly on the fence. Most already lean toward either Bush or Kerry, but still need to be per-

suaded. According to a recent analysis by the *Los Angeles Times*, the presidency will probably be decided in a dozen or fewer swing states—including Florida, Ohio and Pennsylvania—that in 2000 chose either Bush or Gore by margins of 6 percent or less.

Before radio and television, every campaign depended on personal contact with voters. The most important investment a campaign made was in shoe leather. "People would show up on the doorstep," says Laurie Moskowitz, a consultant who ran field operations for the Democrats in 2000. But in the 1960s, the mass media began to interpose itself between campaign and voter, particularly in national elections. Candidates, advised by a growing mob of media consultants, tailored their messages for TV and built campaign strategies around advertising markets. They used consumer and census information to target voters by demographic slices—middle-class white men, African-Americans, suburban soccer moms and so on. "There was a de-emphasis on old-fashioned, grassroots campaigning," says James Gimpel, a political scientist and voter behavior expert at the University of Maryland, who consults with Republicans on how to use demographic data.

This media-focused strategy resulted in

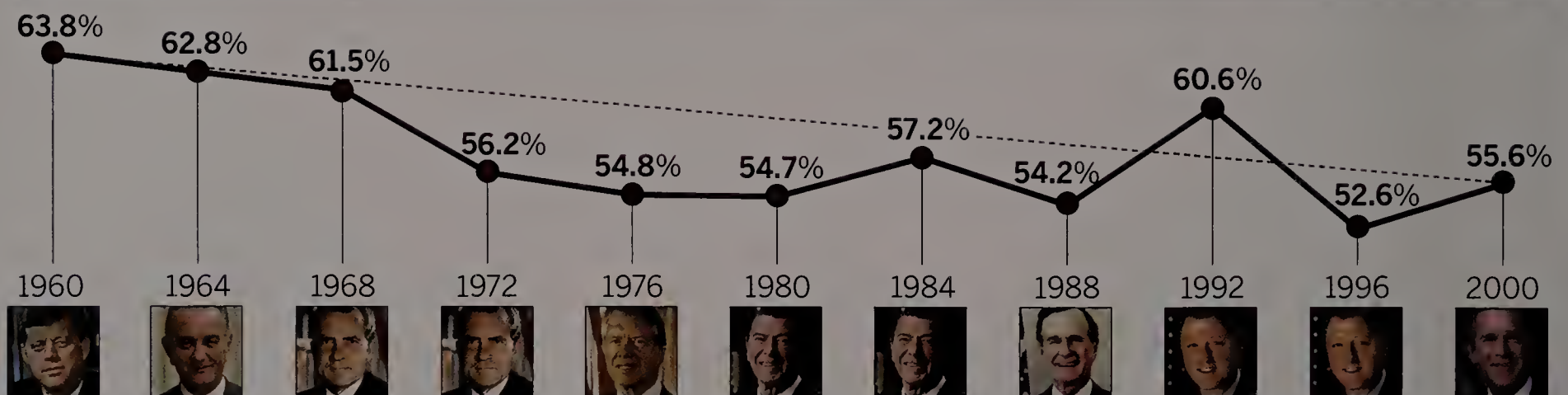
sweeping demographic slices, which led to homogenized messages that failed to inspire a lot of voters. Consequently, they tuned out. Between 1952 and 1972, 60 percent or more of the electorate regularly voted for president. But since 1972, the turnout of eligible voters for presidential elections has reached 60 percent only once, when Bill Clinton was elected in 1992 (60.6 percent of eligible voters went to the polls that year). Voters, sophisticated in the ways of mass marketing, "find it easy to blow off slick advertising," explains Gimpel.

Virtual Shoe Leather

Today, technology brings campaigning full circle and reintroduces shoe leather—virtually. Modern relational database technology makes it easy to compile an unprecedented amount of information about voters that can be used to create customized messages. From local election records, the campaigns can access data on party affiliation, age, gender and how often someone votes. From the census and polling, they can derive information about race, household income and family status. The Internet and fast, inexpensive servers enable the state parties and campaign operatives to keep millions of records current in near real-time. And with that data, Web-based

Voter Apathy Grows

Turnout rate among eligible voters has steadily declined in presidential elections over the past 40 years



It would have taken an additional **24 million** voters for the rate of turnout in 2000 to equal 1960's turnout rate.

SOURCE: Federal Election Commission

Donkey Versus Elephant: How Their Data Compares

Democratic National Committee's DataMart	Republican National Committee's Voter Vault
How it is updated: State parties upload data in XML format	How it is updated: State parties provide data in multiple formats; RNC converts to common format
Who can access it: DNC users, John Kerry campaign and others at the discretion of state parties	Who can access it: RNC users and others at the discretion of state parties
Web accessibility (direct): DNC users, Kerry campaign	Web accessibility (direct): RNC users
Web accessibility (via state party operations): State, local and congressional campaigns in 36 states	Web accessibility (via state party operations): State, local and congressional campaigns in 50 states
Strength: Can be updated dynamically from the field	Strengths: Ubiquitous online access; data covers four elections
Weaknesses: Online access not ubiquitous; data covers only two elections	Weakness: Updates managed centrally

tools allow campaigns to segment voters quickly and efficiently so that campaign workers can make on-the-spot decisions about where to advertise, whom to call or e-mail, which doors to knock on and what messages to send. Last year, Kerry, Sen. John Edwards, Howard Dean and others campaigning in Iowa shelled out \$65,000 each to the state Democratic Party for a database of 1.8 million Iowa voters (under campaign finance laws, candidates and party organizations don't get anything for free; they have to pay for each others' services).

The Kerry campaign used the Iowa data to good effect. John McCormally, communications director for the Iowa Democratic Party, says Kerry's field workers used the state's database, combined with public records on who gets veteran's benefits, to identify 100,000 veterans and their spouses, whom they later contacted by going door-to-door, calling them on the phone or sending literature. Veterans gave Kerry critical support to win the Jan. 19 Iowa caucuses. "Four days before, Kerry was not ahead," notes McCormally. "Even the day beforehand it was close."

Republicans used IT to much the same advantage in 2002. Steve Ellis, director of network and online services for the Republican National Committee, says that the party's then-newly deployed Voter Vault—a set of online data segmentation tools—provided "a marginal but critical increase in turnout and support" for Republicans that year. For the Democrats, detailed online voter data in 2002 helped Arizona Attorney General Janet Napolitano win the race for governor against former Rep. Matt Salmon. Moskowitz, who ran Napolitano's field operation while working for FieldWorks, a political consultancy, used information from the DNC's DataMart (what the Democrats call their national voter database) to build a model of Arizona voters and polled them to gauge their support for Napolitano as well as their views on key issues. Moskowitz found three groups who might be leaning toward a Democratic governor: elderly Republican men; married, independent women; and single, rural women.

Based on voters' answers to the poll questions, the campaign sent two different messages: The Republicans and independent women (who seemed concerned about leadership) heard about Napolitano's ability to make tough budget decisions as attorney general, while the rural women (who cared about Napolitano's personal values) were told her life story. Any time field workers collected new information about individual voters, they reported the updates to the Arizona Democratic Party, which used the data to refine its targets for its get-out-the-vote drive.

One analysis of previous voter turnout data revealed low participation rates in some neighborhoods of Tucson, traditionally a Democratic stronghold. So in the two weeks leading up to Election Day and on the day itself, the party sent more field workers door-to-door. Arizona Democratic Party chairman Jim Pederson says this strategy resulted in a 65 percent voter turnout in the Tucson area, compared to 56 percent statewide. A little more than half of the voters Arizona Democrats personally contacted (either in door-to-door visits or by phone) filled out a ballot.

The GOP Head Start

The Republicans began working on an integrated national voter database nearly a decade

ago, a full six years before the Democrats. Like other technology-related campaign innovations that the party pioneered, such as telemarketing and direct mail in the 1980s, the decision reflected an ongoing business problem. Republicans tend to live in suburban and rural areas, which makes door-to-door campaigning expensive, says University of Maryland's Gimpel. As a result, he says the Republicans pretty much abandoned local grassroots organizing as far back as the 1960s and sought instead to pool more of its resources at the national level.

Ellis, the GOP technology director, says the idea of creating a national voter database (known internally as the voter file) percolated for years, but party officials thought the cost to maintain and track records on 168 million voters was too high. Then, in the mid-'90s, the price of processing power and storage dropped enough to make the project cost-effective. In 1995, the RNC convinced state party leaders to share their voter lists by offering to share the costs of collecting and maintaining the data—the main source of which is voter registration and turnout records from local governments. The states collect the data, which comes in every format from paper poll books to floppy disks to tapes, and turn it over to the RNC. Then, says Ellis, the RNC compiles it and sends

The Republicans, who started building their database capability in the mid-1990s, got a jump on the Democrats, who have raced to catch up since 2000.

it to a vendor who cleanses it by matching it with a database of valid addresses from the U.S. Postal Service. When the data comes back, each voter is assigned a geography-based code that's used to link their record to census information about the same address. As the Democrats did in Iowa, the RNC enhances the file by contacting independent voters and asking them questions that gauge their support for Republicans, such as whether they've voted for the GOP in the past or what they think about an issue.

Ellis says the RNC has unlimited access to the database for its fund-raising and campaigning efforts, while the state parties control access by everyone else. Creating the database and putting it online through a portal created immediate efficiencies when it came to generating mailing and telemarketing lists. But the full power of the system is realized by the field workers for the RNC, state parties and GOP candidates. The Voter Vault interface allows these operatives, many of them volunteers, to generate lists of target voters on the fly, right up until the polls close on Election Day. Because the database is updated on a rolling basis, operatives have a much better chance than they used to of hitting the right targets—voters they can persuade to go Republican. The detail available in the file about each voter helps operatives tailor a personal pitch.

Ellis contends the Republicans' head start and their cumulative investment in data quality over nearly a decade will make the difference for Republican candidates this fall.

Democrats Play Catch-Up

The Democrats beg to differ. After Al Gore won the popular vote but lost the 2000 election, the DNC's postelection competitive analysis identified the lack of an integrated voter database as one of the major operational

differences between the two parties, according to QRS Newmedia's Quinn. By 2002, the party had invested \$3 million dollars in a new IT infrastructure with the national voter database (the DataMart) at its core. In its operation, the DataMart is similar to the GOP's voter file: It's a relational database that links voter registration and turnout records with census information and whatever other data the party can collect. The state parties provide their data (largely from local election records) to the DNC using a set of XML standards for data exchange. The DNC outsources the data cleanup, then makes it available to the state parties, who in turn allow password-protected access to campaign operatives for state, local and congressional candidates.

One shortcoming of the Democratic effort so far is the lack of online tools (such as the Republicans have) that allow party operatives in every state to more easily segment voter data. However, by accessing a secure DNC website, such tools are available to DNC campaigners and Kerry's field workers—putting the Kerry campaign at technological par with Bush. But 14 states still keep their data on a server that isn't connected to the Internet, which could make a difference for other Democrats on the ballot.

The biggest benefit for the Democrats is that for the first time, the national and state parties are working from the same data, says Moskowitz. She contends the Democrats can compete even if they don't all have access to the latest tools. Most major campaigns, and

the state parties, have people on staff with experience using databases, she says, and these operatives don't need the user-friendly interfaces. But she concedes the importance of accessibility. "If you make [the data] more accessible, it's more likely people will use it," she says, including volunteers in the field who aren't expert data analysts.

The 2004 Race

The key to winning the presidency this year, predicts Moskowitz, will be how effectively the major parties and their candidates conduct niche marketing campaigns. "It's going to be mobilization of lots of small universes," she says. "This set of Hispanic voters in New Mexico, and that set of African-American voters in Michigan and nonmarried women in Pennsylvania. That is going to equal mass mobilization."

The expectation of both parties is that their investment in data at the national level will benefit a whole slate of candidates, not just the presidential contenders. "In developing resources on things like direct voter contact, that helps things across the board for the entire ticket," says the RNC's Ellis.

Ellis is deploying wireless capability for field workers this year, so they'll be able to access the Voter Vault application with a PDA and download a list of voters to contact in their door-knocking campaigns. But he says his major initiative will be to update the millions of records in the database with the latest information about new voter registrations, and changes in address and voting history provided through local election records. Like the Republicans, the Democrats will also keep updating their records so that they have accurate lists in the critical days before the election. **CIO**

Senior Editor Elana Varon can be reached at evaron@cio.com.

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Sound Off

Taking Sides on Critical IT Issues

Why Is Business-IT Alignment So Difficult?

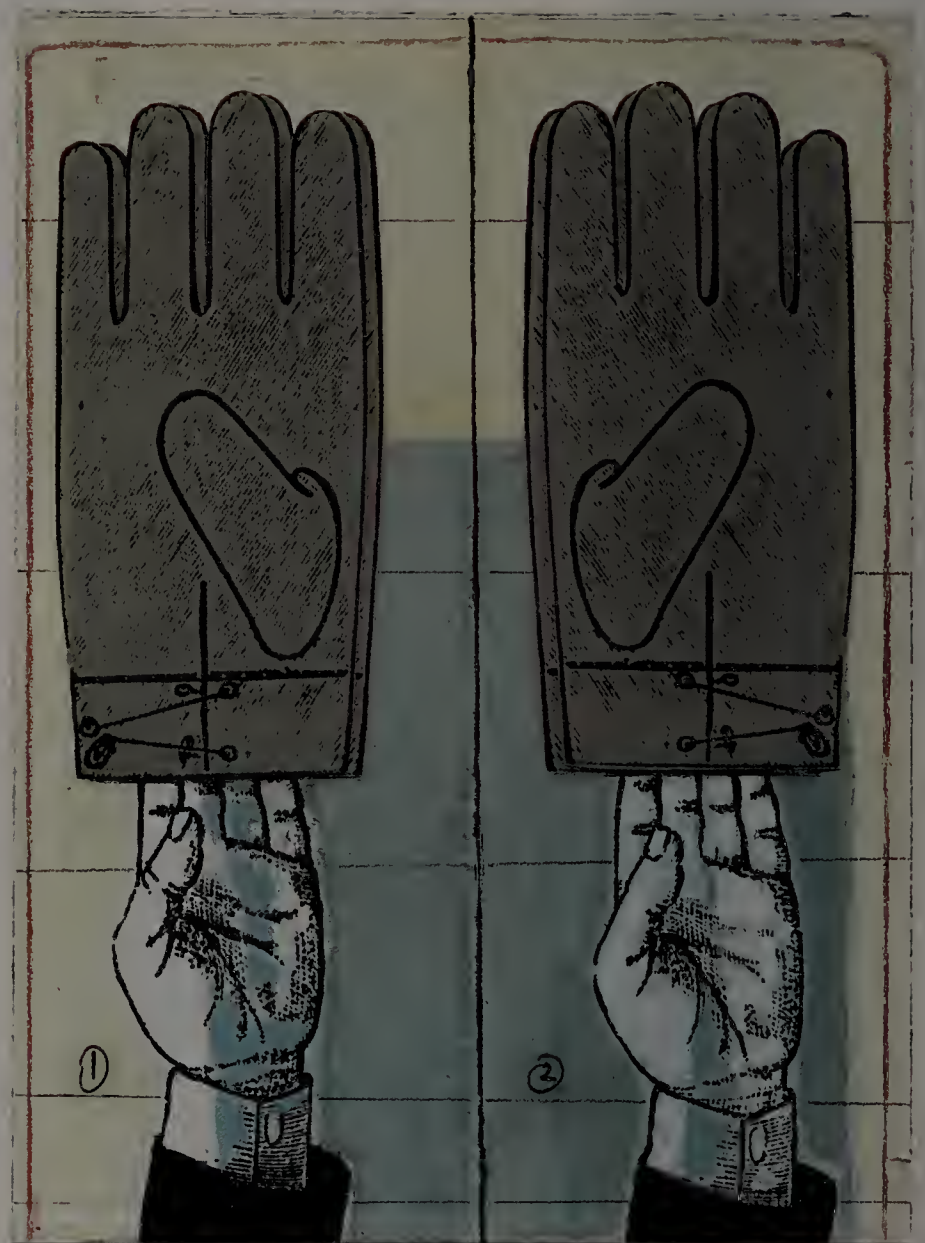
BY ART JAHNKE

ASK ANY CIO to name the Holy Grail of the IT executive, and he is likely to say “alignment.” In fact, last spring, our “State of the CIO 2003” survey found that CIOs cited aligning IT with business goals—along with prioritizing the demands of various business units—as their greatest challenge for the coming year. And we do mean challenge. Alignment, apparently, is a rare thing.

Just how rare it is became evident when CFO Publishing, publisher of *CFO* magazine, released results of a survey that looked at alignment from the other side of the great divide—the financial side. The survey, sponsored by Novell, asked CFOs to rate the alignment between IT and business goals in their companies. According to the survey, almost half of the CFOs say that alignment, like the Holy Grail, has yet to be found. The study found that 44 percent of CFOs described the alignment of business and IT as weak, and 4 percent said alignment of IT and business did not exist.

Why is alignment so hard to achieve? Who, or what, is to blame? What has to happen to achieve the perfect alignment of IT and business goals? Tell us what you think.

Sound Off is a weekly online column about current IT-related



issues. Web Editorial Director Art Jahnke (ajahnke@cio.com) always welcomes feedback.

THE TROUBLE WITH MOST PLANS IS THAT THEY DO NOT indicate what the business value is, and what strategic or tactical business benefit the organization is planning to achieve. The simple matter is that your IT plan needs to have the business metric—not an IT metric of delivery of application.

The CIO needs to be on the hook to report the value, and guide the other business executives on achieving and reporting the contribution of the investment on the other executives' goals. If the other executives can't quantify the business benefits and strategic goals, you probably shouldn't do the project—with the exception of infrastructural upgrades.

IT investments fit into three simple categories: 1. Keeping the lights on. 2. Providing incremental improvements toward

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Sound Off

business goals. 3. Radically changing business processes and their subsequent metrics through transformational investments.

Peter Courtway

CIO

Danbury Health Systems

THE PROBLEM EXISTS IN ONE OR ALL OF THREE AREAS.

First, many IT decisions are driven by business executives who know little about technology—except what they read in magazines or have been told by salespeople. This group includes CEOs, CFOs and COOs. They look to technology to drive the

IT can deliver only capabilities. Turning them into business benefits can be done only with the full participation of the business.

company. They believe that ERP, SCM, KM, data mining and a variety of software solutions will enhance revenue through efficiency gains or new customer sources. In some cases they do, but in most, the costs offset the gains. The company is structurally stronger, but on paper it looks the same or worse.

Second, many companies are directed by IT organizations that are technology-driven but don't understand the real needs of the business. They cannot translate business needs into technology solutions. Many IT executives cannot present a business case for or against a particular technology. Their condemnation or approval is based entirely on the performance of the technology. (Is it full of bugs or is it stable? Fast or slow? Easy to implement or hard? Can the vendor support it?) They present factors that should be considered during the technology evaluation stage but not at a strategic alignment level.

Third, those who run the business and those who run technology cannot agree on what alignment is. In reality, it is all perception based on expectations. There are companies that could be greatly enhanced through the use of technology but believe that they are perfectly aligned already. There are others that have the most beneficial technology available and don't know it.

In most cases, the solution is a strong CIO who knows both business and technology. An individual who performs a cost-benefit analysis first but also intimately understands the requirements of the technology. Someone who also has the authority to say no when other business units attempt to implement technology with-

out the guidance or assistance of the IT organization.

They are few and far between.

Joe Michini

CEO (former CIO)

CandleTyme Stores

I AM ALWAYS STRUCK BY THE INTEREST IN ALIGNMENT that I read in articles and see in surveys. I contrast that with the lack of initiatives that I see in so many places. Oh, yes, there is interest. But little forward movement. What happens to alignment? Well, the road to alignment is like another road—paved with good intentions.

I could understand this much better if governance techniques and methods were unproven. Enough “snake oil” has been sold to unsuspecting organizations to solve their IT problems.

But portfolio management, balanced scorecard, business metrics? These are well established now, very much proven; and while not easy to implement, they can be done. So the problem is inaction, but one cannot lay the blame totally on IT. Those of us who work in this area know that IT can deliver only capabilities. Turning those capabilities into business benefits can be done only with the

full participation and engagement of the business. Without that engagement, any attempt to “align” IT and the business will underachieve or simply fail.

The crime? Those who are concerned about this issue are right. Lack of alignment is a waste. Waste of money. Waste of effort from well-intentioned, hard-working employees. And wasted opportunity for the company and its shareholders.

Let's stop “admiring the problem” and get on with the job!

Jim Love

Managing Partner

True North Systems Consulting

I.T. IS SO BIG AND EXPENSIVE AND FEELS SO COMPLEX IN most corporations that IT has had to invent complex management frameworks to manage itself. These frameworks (such as ITIL for IT Service Management and Cobit for IT management audit) are seen by senior IT managers as the Holy Grail of business-IT alignment.

They are not bad in themselves, just in the fact that they are “IT management frameworks” and not “business management frameworks,” with IT in the middle and the business on the outside. As long as information technology runs with IT management frameworks and not with business management frameworks that are shared across the business (including IT), then there is poor chance of alignment and no chance of integration. The result is bad news for the business when it comes to agility and value for money.

So where are the business management frameworks that meet the needs of business and IT where IT is aligned with the business? Fair question to ask of the CFO and CEO?

John Gibert

Southcourt

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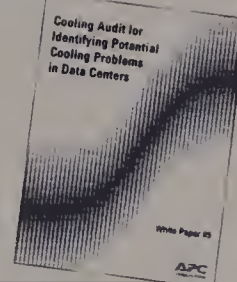
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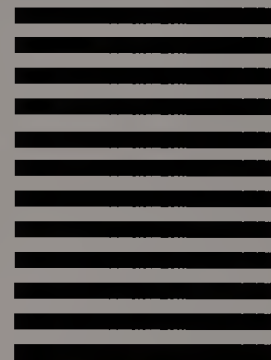
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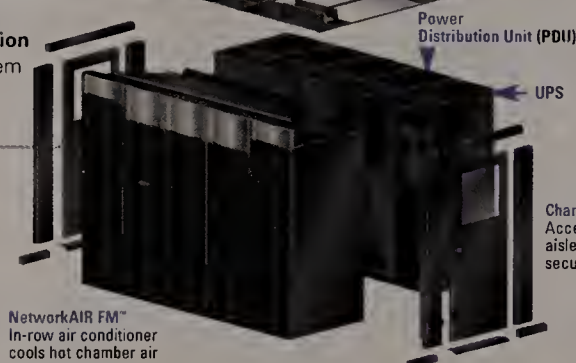
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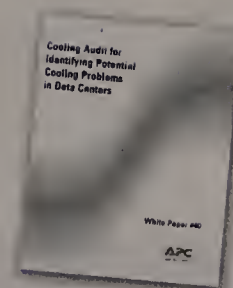
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By Susan H. Cramm

Desperation Outsourcing: Did you just stand by and let it happen?

Reader Q&A

How comfortable do you find the hot seat? E-mail Leadership and Management Editor Edward Prewitt at hotseat@cio.com.

From Chaos, Agility

In the merger of Mead and Westvaco, the new CIO rejected the existing IT corporate cultures for a third way

BY TRACY MAYOR

When Jim McGrane learned in August 2001 that he would be CIO of the soon-to-be-formed MeadWestvaco Corp.—the result of the merger the following January between paper and packaging players Mead and Westvaco—his first thoughts weren't about org charts, dueling data centers, different e-mail standards, head-count reduction or even the fact that he'd never held the title of CIO before.

No, McGrane's first thoughts were about agility...responsiveness...dynamism. In other words, change management writ large.

He'd have to tackle all those other issues, and more, before his first year was out. But from the outset in this merger of equals, McGrane was intent on not simply choosing the best of two cultures and systems, but in forging a third way. The similarity of Mead and Westvaco in revenue, numbers of employees, market capitalization and IT sophistication—and the absence of the two entities' previous CIOs, who stepped down or moved on—meant that McGrane had a freer hand than most executives in M&A situations.

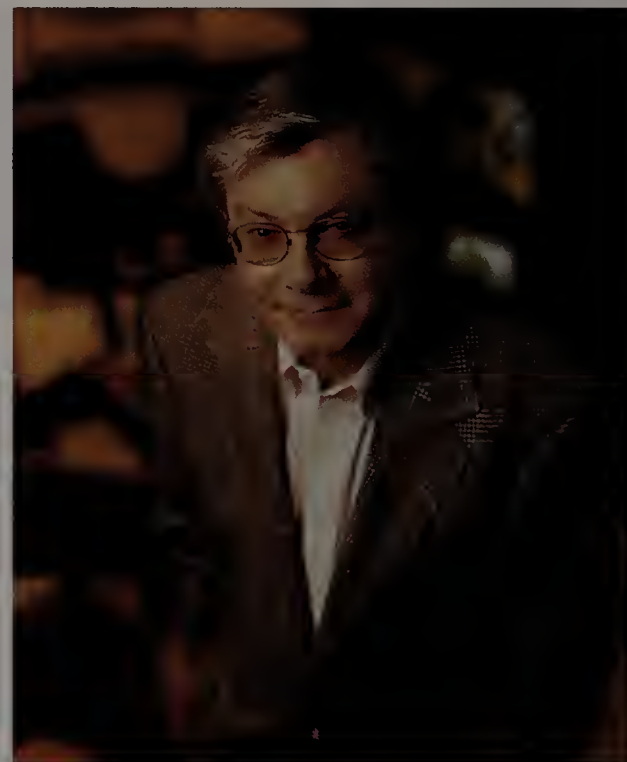
"I saw the merger as an opportunity to get new ideas in," he says. "With no one side having ultimate leverage over the other, it was the perfect environment to introduce new concepts," namely, to transform IT from several operations-focused organizations to a coherent group able to drive competitive advantage and sustain change over a long period of time.

But if McGrane was going to introduce this kind of mind-set shift, he'd have to work fast—and accomplish it amid an atmosphere of relocations, executive departures, plant closings and massive

layoffs. "We had laid out a very aggressive time line, 90 days," he recalls, "which meant we had to go forward organizationally at the same time we were getting on the same page with a shared vision."

Fast-Track Change

McGrane came from the Mead side of the merger, having overseen the com-



MeadWestvaco CIO Jim McGrane used the merger of the two paper giants as an opportunity to refocus the mind-set of his IT staff on agility.

pany's ERP implementation as vice president of business process development. With one company's CIO ready to retire and the other's moving deeper into the packaging end of the industry, McGrane found himself with a new title, CIO, just four months before the merger took effect in January 2002, and a long list of action items to accomplish.

McGrane had to decide on technology standards, the number of data centers and so on. But more pressing in his mind was the task of combining what were essentially four separate technology cultures—two at each company, in ERP and in IT—into a single organization with a shared vision, objectives for the integration period, and a common strategic plan for IT in the first year of the new company and beyond.

McGrane was wise to tackle the big picture first, before tying up the tech details, IT management specialists say. “In a merger-and-acquisition situation, there’s a lot of opportunity but also a lot of risk,” says Jonathan Poe, a principal analyst at Meta Group. “The question for the executive becomes, ‘How well do you handle the risk to take advantage of the opportunities?’”

“CIOs in an M&A situation need to take a fast path to the integration process,” Poe continues. “You need to articulate how you’re going to share power, how you’re going to converge, how you’re going to grow and persist as an organization. And you need to be able to say how IT is going to help those objectives. It really is a message that has to come from the top down.”

To help communicate (and construct) his integration message, McGrane set up two teams, one for business executives and the other within IT. The Enterprise Information Solutions Steering Committee—comprising senior-level operating, financial and human resource executives—oversees the overall strategic direction of IT, reviews its investments and helps resolve competing demands among different business groups.

And within his IT organization, McGrane set up a 35-member extended leadership team. His goal was to build an information organization that would be able not only to weather the merger but also to respond quickly to a sometimes perilous marketplace. “I started with 35

people with the idea of achieving a common, highly adaptive culture, then have them cascade that culture to all 500 people [within IT],” he says.

Toward a More Nimble Culture

The extended leadership team, made up of McGrane’s direct reports and their direct reports, was also one way for him to manage what was suddenly a much larger operation. “I was coming from overseeing a major business process software implementation, which was very project driven, and having to continue that while at the same time taking on day-to-day operations and cost restructuring,” he explains. “The organization was five times larger than what I had been managing. I couldn’t walk around and touch everybody anymore, so the leadership team became a way to get everyone engaged.”

The IT leadership team met several times with two consultants from Millemann & Associates, Jack Gilbert and Carolyn Hendrickson. Their contribution was not only to facilitate a shift in the approach to IT, but also to bring together disparate players during a time of great upheaval. “It’s hard to describe how much was up in the air,” says Gilbert. “We had 35 people in a room, many of whom had never worked together before, many in a different organization with a new leader, many of whom were dealing with the loss of colleagues and with relocation. There was a roomful of people wondering, What does *nimble* mean anyhow?”

“Jim had a clear vision of what a nimble organization meant to him,” says Hendrickson. “He knew he needed to have that capability, but he also knew he didn’t have two to five years to get that in place.” To that end, she and Gilbert focused on helping the team hammer out a change model for reorganizing into a more centrally administered, standards-centric group; a strategic evolution plan; and a new stewardship model that made

BUSINESS VALUE

Beyond the IT Comfort Zone

MeadWestvaco CIO Jim McGrane is a nontechy IT leader, and he’s proud of it. He came to Mead through business-side management jobs in high-tech and publishing. “I’m in no way implying that I’m technologically illiterate, but I’m not in love with technology,” he says.

As McGrane sees it, CIOs should focus on creating business value rather than trying to sell the benefits of technology. He breaks down this role into four major efforts:

1. Establish IT strategy.
2. Work with the executive leadership team.
3. Set IT standards and adequately explain their value to business units.
4. Ask unexpected questions to ensure IT employees don’t get too comfortable.

The first three points are standard CIO fare, but last is, well, unexpected. McGrane believes it’s crucial that CIOs think outside the norm. That might mean, for example, advocating that IT staffers not learn a particular technology, but learn instead simply to manage it on an outsourced basis. “That’s a strange proposition for managers who believe that owning assets provides control,” McGrane says, “but it creates the need to study alternatives and make a decision based on a broader view of the world.”

—T.M.

the group responsible for proving IT value to business-IT teams.

And they hammered on McGrane as well. Even within Mead, there were two different technology cultures before the merger, so McGrane wasn’t well-known.

Hot Seat

As many of his key employees were getting used to him, McGrane had to endure some change of his own.

"Jim had a little coaching too," says Gilbert with a laugh. "Every now and again, we'd have to tell him to stop talking."

Cutting Costs, Cutting People

In the more than two years since the merger, McGrane and his team have converted 5,000 workstations into a standard environment, migrated the same number of users to a common e-mail system, converged the company's wide and local area networks, migrated to a single data center, deployed SAP to about 70 percent of the new company, and merged and upgraded the company's PeopleSoft system.

Technology tasks are taken care of by a phalanx of managers who report directly to McGrane, including a CTO and directors of technical services, operations, manufacturing systems, and business and emerging technologies.

This team has cut costs—a lot. In two years, spending has dropped some 23 percent overall, with 20 percent of the savings coming from restructuring, 20 percent from purchasing efficiencies and 50 percent from staff reductions. All told, McGrane oversaw a 25 percent reduction in the total labor force—down to about 500 full-time U.S. employees in IT.

He was faced with the particularly sticky task of handling a drawn-out period of layoffs. One group of people (including many contractors and third-party personnel) was let go during the first three months of the merger, but other employees were asked to work through those initial months knowing their jobs would ultimately be eliminated—an awkward situation, McGrane acknowledges.

"It's a challenge. All you can do is be up-front with people. We said, 'Here's our

MANAGEMENT REPORTS

Encourage Employee Socializing

How to optimize the other kind of corporate network

The assumption underlying knowledge management efforts is that untapped power lies within an organization and needs only to be brought forth. But what if KM software, communities of practice and offsite team-building exercises are actually part of the problem? A forthcoming book on companies' social networks points out that collaboration has a cost, in the form of ever-more meetings and e-mails that serve to bog down employees rather than unleash them.

Instead of indiscriminately pursuing greater communication, managers would do well to figure out how to optimize the flow of information among their employees, say researchers Rob Cross and Andrew Parker in *The Hidden Power of Social Networks: Understanding How Work Really Gets Done in Organizations* (Harvard Business School Press, June 2004).

When Cross and Parker, who are both affiliated with IBM's Knowledge and Organizational Performance Forum, studied the social networks at more than 60 organizations, they saw certain patterns of interaction. Four types of employees are particularly important in social networks.

■ **Central connectors** are the few people in every group whom everybody turns to. They are the decision-makers, the experts. However, when the demands of the job grow bigger than a central connector can handle, this person may inadvertently slow down others by not responding quickly enough.

■ **Boundary spanners** are people

who link two or more groups of employees who are separated by location, hierarchy or function (for instance, IT and marketing). This role is important when different expertise needs to be shared—for instance, when coordinating the design, manufacture and marketing of a new product.

■ **Information brokers** serve as conduits. Remove them and communication inside the group is greatly diminished.



■ **Peripheral people** are the outsiders. Sometimes these people are underutilized and sometimes their professional or social skills are lacking. Occasionally, though, they are peripheral by design, as in the case of research scientists whose time is best spent in the lab.

Cross and Parker offer managers suggestions for improving their organizations' social networks—for instance, identifying the boundary spanners and assigning them to projects that would benefit from cross-group collaboration. Social network analysis is a tool for helping your organization get out of its own way.

—Edward Prewitt

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Hot Seat

current state, here's our future state, here's what the benefit package will look like," he says. "We were blessed with people who were very loyal to their organization, and I hope they felt like they were being treated with honesty."

McGrane may have stabilized MeadWestvaco's IT group, but the company itself isn't winning accolades from Wall Street. Pamela Rice, a credit analyst with Standard & Poor's, says her company revised its outlook on MeadWestvaco to negative in late 2003, noting

"Layoffs are a challenge. All you can do is be up-front with people. We said, 'Here's our current state, here's our future state, here's what the benefit package will look like.'"

—Jim McGrane, CIO, MeadWestvaco

that coated paper is one of the weakest segments of the forest-products industry at the moment.

To do his part to improve MeadWestvaco's fortunes, McGrane is pushing forward with his three-to-five-year goal of revamping how IT investments are managed, to ensure that IT is as closely aligned with business strategy as possible. He's looking for ways to leverage ERP, for example, to improve the company's supply chain and drive down costs. "I do believe IT is strategic, and I do believe it can make a difference," he says. **CIO**

Tracy Mayor (tmayor@comcast.net) is a freelance writer focusing on technology. Send your comments on this article to hotseat@cio.com.

Leadership Agenda BY SUSAN H. CRAMM

Desperation Outsourcing

Did you just stand by and let it happen?



We've all seen desperation outsourcing rationalized under the guise of strategy. But these "strategic initiatives" really are ham-handed attempts at rectifying larger ills. The changes are made, different symptoms of the underlying problems emerge, and the root causes remain unresolved. Deployed in this way, outsourcing is a waste of time and harmful to the productivity of the enterprise and the lives of the people involved.

That doesn't mean that outsourcing (or its varieties of extended staffing, cosourcing, shared sourcing and offshoring) is necessarily a bad thing. It's a powerful tool—but one that is dangerous in the wrong hands. My assessment is that the executives sponsoring hurried, across-the-board outsourcing initiatives are desperate—busy, scared, frustrated, tired and naive.

Regardless of their motivations, they need some help. If you are a stakeholder of an organization considering outsourcing, you need to get involved, not assume a wait-and-see posture.

Let's review a real-world, real-time case study. A Fortune 50 IT executive is currently in the process of outsourcing his function. After many years of neglect of IT, the past five years have brought substantial increases in funding, headcount and demand. IT is challenged with lengthy approval processes, increased financial scrutiny, strict headcount limitations and decentralized business clients who have authority to make decisions in every area—except IT. The IT executive in question has a poor reputation for delivery and is becoming desperate.

Outsourcing *might* be able to help address *some* of the issues raised. In combination with offshoring, outsourcing can get more IT for the money and reduce headcount. It's also possible to leverage outsourcing to improve process discipline and, thereby, project delivery. The desperation play of the IT executive lies in the assumption that current internal resources are substandard and that across-the-board outsourcing is the only solution (the "better gene pool theory").

Everyone who works with this IT executive has concerns, but so far, all parties are keeping their distance. His supervisors are letting him develop the concept with the confidence that they will have the final say. His peers assume that calmer (senior) heads will prevail or, failing some intervention from the top, that they will deal with the changes if and when they come. And finally, his subordinates are frustrated that they are not involved.

While it's true that this IT executive has disregarded the spirit and practices of change management (see my previous column titled "Change of Hearts" at

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Hot Seat

www.cio.com/print-links), it's also true that the rest of the leadership staff is guilty of benign neglect. They talk

among themselves while their desperate colleague is giving speeches, pushing forward and slowly destroying (both himself and his organization).

No one really likes outsourcing, even well-run initiatives. But most people are considered "part of the problem" if they raise objections or concerns. The challenge is how to intervene productively without experiencing collateral damage. If you are the boss, your authority opens the door. Your approach is simple: Just ask intelligent questions and, based on the responses, require changes in the scope and approach. If you are a peer, your influence is through personal involvement, information and resources. If you are a subordinate, your path to influence is through supporting the effort by offering to be part of the team. Regardless of your vantage point, you have to be clear on outsourcing benefits, risks and best practices so that you can base your discussions on principles—rather than being positional and emotional.

It's impossible to summarize outsourcing wisdom within the constraints of this column. I encourage you to do your homework by accessing the IT research organizations (for example, Gartner, Meta Group, the Corporate Executive Board), periodicals such as *CIO*, and university research such as that from Harvard Business School Publishing. It's hard to rely on expertise from consultants since many have conflicts of interest, but if you ask around, you may be able to find smaller firms that have good experience.

One very small firm that I have used

in the past, NDMA, has a nice write-up ("Outsourcing: How to Make Vendors Work for Your Shareholders," by N. Dean Meyer) that will give you the highlights and lowlights without too much pain. Meyer says (and I agree) that under certain conditions, outsourcing will save money, reduce risks, accommodate peak loads, and develop internal staff and processes. But these benefits come about only if internal staff remains in charge of the client relationships by deciding whether to "make or buy," selecting and managing vendors, establishing strategies and technical directions, defining standards and policies, and seeing that the vendor's knowledge is transferred internally over time.

Protect your organization by ensuring that those managing IT delivery work for the same shareholders that you do. Desperate executives, by definition, are not focused on the long term or thinking with a level head. Don't stand by and let them destroy your organization with outsourcing.

Reader Q&A

Susan H. Cramm answers questions on "Desperation Outsourcing"

Q: In your case study, it's the IT executive who is considering outsourcing. But what about when outsourcing decisions are driven by the business executives? The CFO is often pushing outsourcing for the cost savings. When this happens, internal IS staff can't be "in charge of the client relationships," as you write, which implies that the outsourcing is doomed to failure.

A: If you are a subordinate and your boss is pushing outsourcing, then your only option is to play offense by getting on the team and doing everything you can to ensure that the outsourcing is

done responsibly. There are many leadership initiatives that are long on strategy but short on resources. It's amazing the influence that you can have if you lead rather than hope for the best.

Q: What are the legal implications of outsourcing? What is the relevant legislation?

A: Everyone hates the short-term implications of outsourcing, but most everyone believes that establishing trade barriers or limitations to outsourcing will harm our competitiveness in the long term. From a policy perspective, the focus is on education and requiring companies to act responsibly by investing some of their outsourcing savings in assisting displaced workers (for example, offering retraining and wage insurance).

From an individual perspective, it's prudent for all IT professionals to develop skills that are more difficult to displace. Assuming that you are going to remain in the IT profession, you can try three tactics. First, consider crawling up the food chain—if you are a programmer, develop analysis and project management skills; if you are a project manager, develop program management, and business and relationship skills. Second, if you are an IT executive, consider working for technology-driven companies, including those that provide outsourcing services. Finally, if you are a contractor, consider finding full-time employment, since the contingents are going first and going fast. **CIO**

To see more reader questions and answers from Susan H. Cramm, go to www.cio.com/leadership/agenda.html. Cramm, a former restaurant CIO and CFO, is president of Valuedance, an executive coaching firm in San Clemente, Calif. You can contact her at susan@valuedance.com and learn more about Valuedance at www.valuedance.com.

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From the Publisher

gbeach@cio.com

A Word About Customers



Gary J. Beach

WORDS ARE WONDERFUL. They convey so many meanings, particularly when you analyze seemingly comparable words in different languages.

Take the word *customer*. In Webster's New World Dictionary, customer is defined as "a person who buys, especially one who buys from or patronizes an establishment regularly." The root of customer, not surprisingly, is the word custom, or "a usual practice or habitual way of behaving; habit."

I like the Japanese definition for customer I heard at a business intelligence conference much better. According to the keynote speaker, the word for customer in Japanese, *okyakusama*, translates as "honored guest."

How does your current array of technology vendors treat you? As a "habit" who buys regularly from them? Or as an "honored guest" in whose well-being they are keenly interested?

Before you answer that question, here's another.

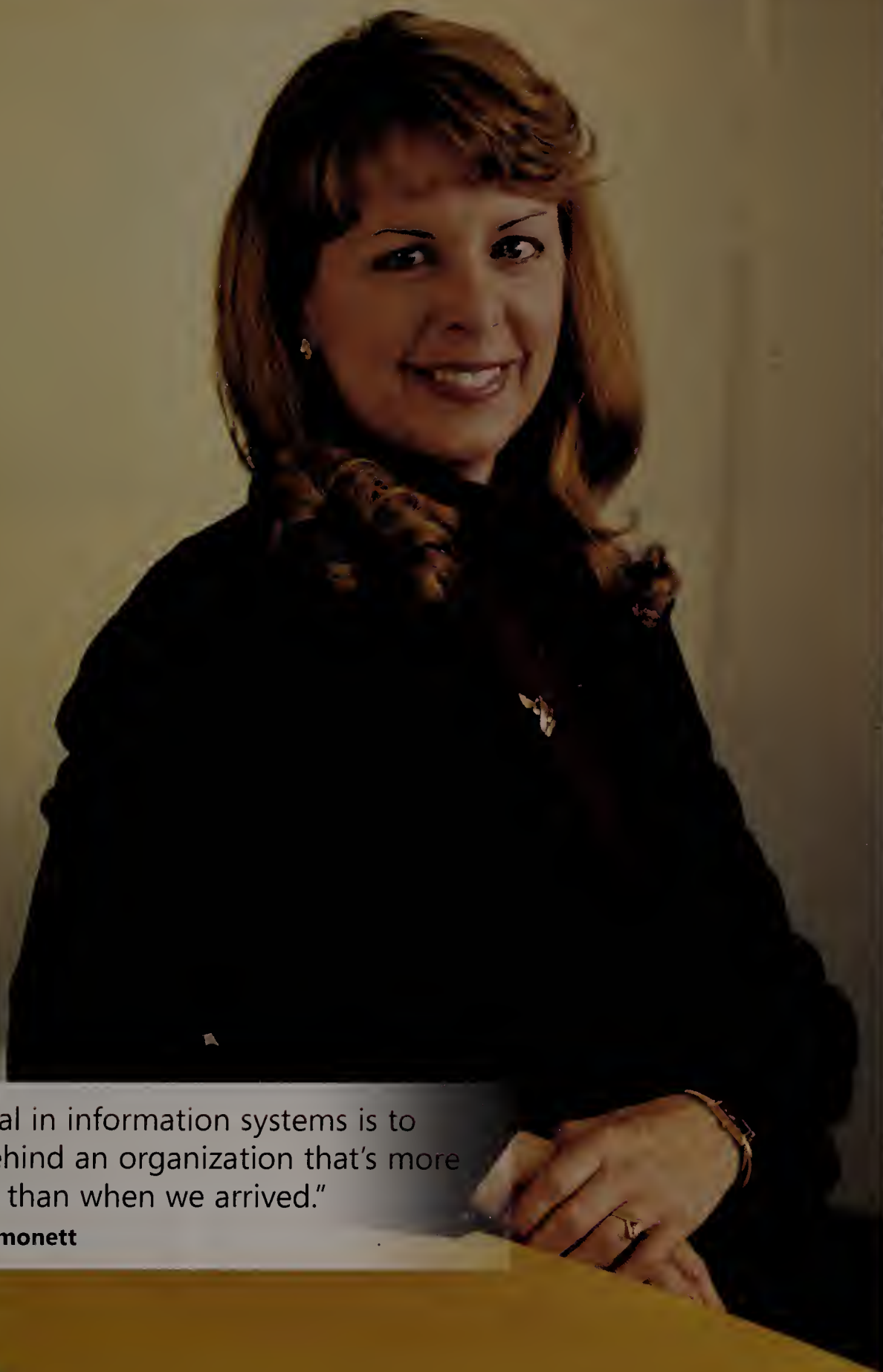
How do you—or more precisely, how does the technology

infrastructure of your company—treat customers, partners and employees? Is it optimized to treat them as habits? Or is it built on the pillars of *okyakusama*? If it's the latter, then it's an infrastructure from the data center to the edges of the network that maximizes every customer interaction.

In the complex world of the global economy, every company is a buyer and a seller of something. Few people would doubt that CIOs as buyers currently find it easier to get better deals from technology vendors.

But conversations with many CIOs convince me that most of them still take their customers for granted. Few are leveraging this era of better prices for technology to modernize their aging technology infrastructures built for 20th century customer needs.

It's time to borrow the Japanese view of customers. CIOs who build a 21st century technology infrastructure that treats customers as honored guests can sit back and watch sales and market share increase.



"Our goal in information systems is to leave behind an organization that's more efficient than when we arrived."

— Sue Simonett

Sue Simonett Senior Director of IS

*General Mills, Inc.
Minneapolis, Minnesota*

Sue Simonett has always worked in Information Systems (IS), a career she loves both for the strategic view it has afforded as well as the ability to positively impact the lives of end users.

Recently charged with reinventing the way that a sales force of 450 retail reps managed their numerous product lines, she's implemented an ingenious handheld system that brings technology to the front lines of the company.

Using a stylus and a handheld mobile device, sales reps now electronically record product information while in the store. Gone are the days of messy paper logs and evenings spent keying the day's data into a laptop for downloading to corporate. At the end of each day, the rep simply places the device in a cradle and the data is sent directly from the handheld. The results: sales reps that can handle more products with fewer errors, and get the right products to the right shelves faster.

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leadership innov

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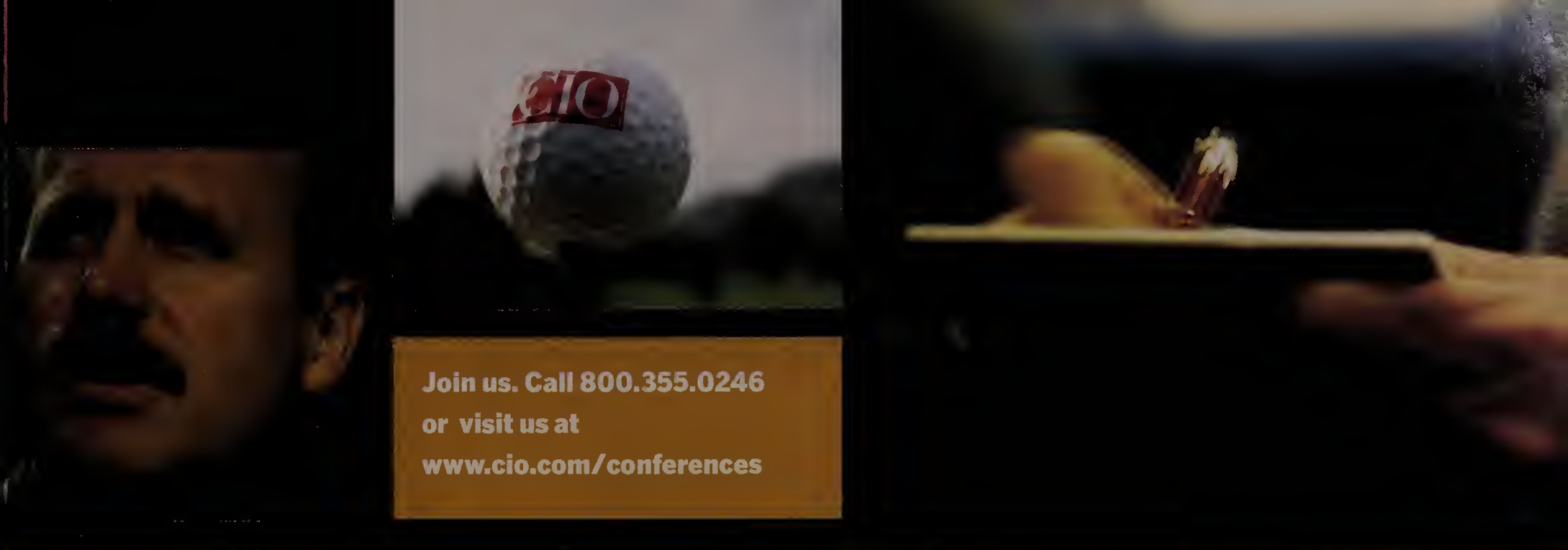
sourcing strategies, modular architecture and open-ended technology, along with nimble governance and project prioritization and management structures. This year's CIO 100 winners exemplify leadership and innovation in the use of IT to give their companies an edge in an environment where the only constants are change and uncertainty.

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- > Demonstrated processes and flat staffing that enable them

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- > Synchronized business and IT to capitalize on change, while designing a **robust and adaptive infrastructure** to accept frequent and substantial change without impacting service level agreements.
- > Significantly contributed to a growth in market leadership by using IT support to **facilitate**



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Leadership and innovation have many guises. **Expose yourself to new ideas and approaches.**

Symposium moderator **Paul Saffo**, Director of the Institute for the Future, returns this year to propose more provocative scenarios and inspire spirited discussions. Saffo takes a look at what current trends not only pose the most problems for CIOs, but those that could provide great opportunity.

Michael Hawley, Director of Special Projects at MIT, has accomplished many amazing things himself – named as one of the most creative individuals in America in 2001, won the Van Cliburn piano competition in 2002, did pioneering work in digital cinema at Lucasfilm, deployed technology for the 1998 American Everest Expedition, and recently published the world's largest book of photographs, BHUTAN. Hawley says, above all, he is proudest of his students, who have in turn gone on to accomplish their own amazing things. He shares insights on his own style of leadership, inspiring innovation and applying technology to benefit business and humanity.

ation agility

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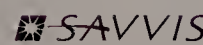
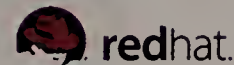
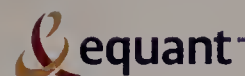
And you meet more CIO peers during the golf tournament, refreshment breaks, nightly receptions and special hospitalities.

the delivery of new business models.

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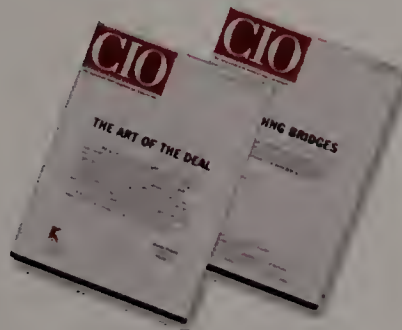
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EXECUTIVE Summaries

June 1, 2004

COVER STORY Privacy Is Your Business

By Susannah Patton | 48

As the guardians of data, CIOs are uniquely positioned to understand why customers and privacy advocates could view data collection and mining as intrusive. CIOs may not always make the final call on who gets access to customer data, but they must do more than oversee data collection; they must reposition themselves as the champions and advocates for privacy. If they don't, their companies could end up in the headlines of the next privacy scandal story. CIOs at Vanguard and other companies have become privacy champions by educating themselves about regulations, deploying technologies that help monitor access and developing a formal process for data access at their organizations. CIOs can avoid political damage and pressure if they have an official corporate data access policy to back them up.

"One of my top responsibilities is to make sure that my superiors and my peers understand how information can be made available, and to ensure we have a process for safe data access."

—CHRIS KOWALSKY, CIO,
EDUCATION MANAGEMENT

How the FTC Rescued the Dinner Hour

By Alice Dragoon | 58

ON JUNE 27, 2003, when the Federal Trade Commission's Do Not Call Registry opened for business, consumers began flocking to www.donotcall.gov and calling the toll-free number to shield themselves from telemarketers. In the first week, consumers registered 10 million phone numbers. Not many IT projects are funded just three months before their scheduled go-live date and built under the glare of national media attention and threats of lawsuits. Yet despite these challenges, the Do Not Call system was one of the most successful IT projects in the history of government. By using such strategies as splitting the project into manageable phases, creating a performance-based contract and lining up a vendor before Congress came through with funding, the FTC got the consumer registry up and running in less than 100 days.

UPS Versus FedEx: Head-to-Head on Wireless

By Galen Gruman | 66

SHIPPING BUSINESS RIVALS FedEx and UPS follow different paths to information technology deployment: FedEx usually leads the way with cutting-edge applications, while UPS takes a more deliberate fast-follower approach. But when it comes to wireless technology, both have recently adopted standards-based technologies such as 802.11b LANs, Bluetooth short-range links and general packet radio service cellular networks. The rationale? These off-the-shelf technologies provide lower development and maintenance costs, greater throughput and security, and lower acquisition and deployment costs. The technologies are stable and secure enough to be foundations for mission-critical apps, and their global standard status is essential for worldwide operations. Although the companies' goals are the same—shave seconds off the millions of shipment transactions processed per day—FedEx and UPS have implemented wireless technologies in different ways, guided by differing business needs and processes. This story compares the companies' wireless policies side-by-side.

IT on the Campaign Trail

By Elana Varon | 72

THE REPUBLICAN AND DEMOCRATIC parties have invested millions in central, state-of-the-art data warehouses, data mining software and Web-based user interfaces to create an arsenal of marketing tools for fund-raising and getting out the vote. The Republicans, who started building this capability in the mid-1990s, got a jump on the Democrats, who have raced to catch up since 2000. By their own admission, the Democrats still lack some of the capabilities that the GOP has in place, including the ability to give every field worker in every state online access to voter information. Regardless of who's ahead in this race, the party regulars agree on one thing: The 2004 presidential outcome may well hinge on how the donkey and the elephant use IT. The key to winning, analysts predict, will be how effectively the parties and their candidates conduct niche marketing campaigns in which IT systems play the primary role.

Hotseat: From Chaos, Agility

By Tracy Mayor | 82

THE JANUARY 2002 MERGER of paper and packaging giants Mead and Westvaco brought together relative equals. Because neither side's executives dominated the new MeadWestvaco, CIO Jim McGrane was able to choose a new path for IT. He sought to combine separate technology cultures and ERP systems into a nimble, single organization with a shared vision and strategic plan. McGrane, a first-time CIO, drove IT governance through a new IT steering committee composed of senior business and operations executives, and managed change with an extended IT leadership team. In the more than two years since the merger, McGrane has integrated all of MeadWestvaco's IT systems, reduced the workforce by a quarter and lowered overall IT costs by 23 percent.

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1. BASED ON TESTS WITH AMD OPTERON VS. 3.2 GHZ XEON RUNNING LINUX. AMD OPTERON RAN 45% FASTER ON SPECWEB 99SSL – BASED ON PUBLISHED DATA FROM WWW.SPEC.ORG 1/22/04. FOR SOLARIS, OS MICROBENCHMARKS PERFORMED AN AVERAGE 42% FASTER ON AN AMD OPTERON PROCESSOR MODEL 246 (2.0 GHZ) BASED SYSTEM COMPARED TO A 3.2 GHZ XEON SYSTEM. 2. OFFER VALID IN THE U.S. AND THROUGH SUN STORE ONLY. PROMOTION VALID THROUGH JUNE 30, 2004. FOR A LIMITED TIME ONLY, GET THE JAVA ENTERPRISE DEVELOPER PROMOTION, A VALUE OF OVER U.S. \$7000, FOR ONLY U.S. \$1499 PER YEAR FOR A 3-YEAR SUBSCRIPTION. SEE WEBSITE FOR DETAILS. 3. PRICING IS U.S. LIST PRICE. ALL PRICES QUOTED ARE IN U.S. DOLLARS. * TOLL-FREE NUMBER AVAILABLE IN THE UNITED STATES, CANADA AND INTERNATIONAL AMERICAS ONLY.

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